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UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
Washington 25, D. C.

1957 STATUS REPORT OF WATERFOWL

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This information has been hurriedly compiled both in the field and in Washington. Also, the report has not had the benefit of proof-reading or editing and should be regarded as subject to correction. The information contained in this report is for administrative use and is not for publication without permission of the contributing agency.

INTRODUCTION

A convention between the United States and Great Britain for the protection of migratory birds was signed in 1916, and a similar convention between the United States and Mexico became law in 1936. The treaty with Mexico includes the phrase ". . . . by means of adequate methods which will permit, insofar as the respective high contracting parties may see fit, the utilization of said birds rationally for purposes of sport, ...". The Act which implements the treaties in the United States contains the following directive: ". . to determine when, to what extent, if at all, and by what means, it is compatible with the terms of the conventions to allow hunting . . .".

The problem of determining when, and to what extent, waterfowl can be used rationally for sport is a complex one and demands that considerable information be available concerning migration patterns, current population status of the various species, and the effect of hunting on the population. In order to meet their obligations in this respect, the Governments of Canada and the United States have conducted surveys and investigations for a number of years. During the past several years, three major fact-finding surveys have been conducted annually. These are: (1) a survey of the wintering areas during January to determine the number and distribution of birds remaining after the shooting season; (2) a survey of the breeding grounds during May, June, and July to determine the size and distribution of the breeding population and to determine changes in the production of young; and (3) a survey during the fall shooting season to measure the size of the kill of waterfowl in the United States. Also during the same period an extensive banding program was being carried out in some of the more important portions of the breeding grounds. Although this program is still underway, preliminary findings have established approximate relationships between various portions of the breeding grounds and the four management flyways into which the United States is divided. These data have provided a basis for accumulating the breeding ground survey data into a forecast of expected changes in the relative size of the fall flight of waterfowl in each of the flyways.

This report is a summary of the results of the winter survey, the breeding ground survey, and the kill survey. These data are brought together for the purpose of supplying administrators with all factual information available concerning current waterfowl population status, and

is intended for use primarily as a guide for setting the 1957-58 shooting regulations.

Inasmuch as waterfowl management within the United States is on the basis of four flyways, this report is organized accordingly. In doing this, the flyways have arbitrarily been extended beyond the limits of the United States to include the breeding and wintering areas most closely associated with each flyway. Thus, for winter surveys, Alaska, British Columbia, Alberta, and western Mexico have been considered with the Pacific Flyway States; Saskatchewan, eastern and central Mexico with the Central Flyway; Manitoba and Ontario with the Mississippi Flyway; and Quebec, Newfoundland and the Maritimes with the Atlantic Flyway. When summarizing data from the breeding grounds, band recovery data are used to determine the relationship between each breeding area and the flyways. Approximately, however, it is known that birds from Alaska, Northwest Territories, British Columbia, Alberta, and Saskatchewan are important to the Pacific Flyway hunters; that these same areas excepting Alaska and British Columbia supply birds to the Central Flyway; that birds from northern Alberta, Northwest Territories, Saskatchewan, Manitoba, and western Ontario move through the Mississippi Flyway; and that Alaska, northern Canada, and southern Canada from Saskatchewan to Newfoundland supply waterfowl to the Atlantic Flyway.

* * * *

SCOPE OF INVESTIGATIONS AND METHODS USED

Winter Survey

During recent years the survey of waterfowl wintering grounds has included the major wintering areas in Alaska, Canada, the United States, and Mexico. In January 1957, due to circumstances beyond our control, it was not possible to carry out the survey in Mexico. In view of the fact that there has been a considerable shift in the winter distribution of birds between wintering areas in Mexico and the United States, it is necessary that information be available from both countries before the data are meaningful. For example, without data from Mexico any change in the numbers of several species of ducks observed in the United States might not indicate a change in population size, since more or less birds could have migrated into Mexico. The 1957 winter survey figures for the Pacific and Central Flyways are questionable for this reason.

In the United States, the Bureau of Sport Fisheries and Wildlife organized the surveys but the bulk of the field work was carried out by personnel of the 48 State conservation agencies. In Alaska the survey was carried out by Bureau personnel, while in Canada the Canadian Wildlife Service organized the survey and the field work was conducted by the Canadian Wildlife Service and the Provinces.

The wintering areas were surveyed by means of observers in boats, cars, and aircraft with all important areas being covered from the air. Available information as to personnel, equipment and distances traveled is presented in the following table.

Location	No. Observers			Aerial Observation		Miles Driven	Boat Hr.
	U.S.	State	Other	No. Planes	Mi. Flown		
Pacific Flyway	53	310	2	32	18,265	9,700	30
Central Flyway	66	331	25	38	23,220	44,740	44
Mississippi Flyway	71	771	62	44	23,920	46,950	54
Atlantic Flyway	46	201	6	36	20,210	8,260	34
Total	236	1,613	95	150	85,615	109,650	162

Breeding Population and Production Surveys

The extensive breeding ground surveys of the past few years have been continued. These surveys now include two coverages of most of the important waterfowl breeding areas, the first coverage occurring in May for the purpose of measuring the distribution and relative size of the breeding population, and the second being made during July for the purpose of measuring the production of broods. A combination of data from important breeding areas forms the primary basis for forecasting changes in the relative size of the fall flight in each of the four flyways.

The bulk of the important waterfowl breeding areas in Alaska and Canada are surveyed from the air using statistically designed sampling techniques and similar methods of collecting and analyzing data. Survey methods vary somewhat among the 25 States conducting surveys, although the methods employed in the majority of States with important numbers of breeding ducks are similar in most respects to those employed in Canada and Alaska.

In 1957, aerial crews sampled approximately 2,375,000 square miles of the best duck breeding habitat on the continent. Ducks were counted on approximately 16,000 square miles of habitat, or somewhat less than one percent of the total breeding area. Although this may seem like a rather small portion of the total breeding habitat actually surveyed, sampling error was less than 20 percent of the average population density in most survey areas, and was considerably less than 20 percent when considering the breeding range as a whole.

The results of the breeding ground surveys are presented as "index" figures. When conducting aerial surveys of breeding birds, or of broods, not all birds present are seen and recorded. No attempt has been made to estimate the number which have been missed. The indices, therefore, are based on birds actually seen, and it is emphasized that they do not constitute an estimate of total population present. Even though the "index" figures are not a measure of total populations, it is believed that they are representative of relative population levels to the extent that data from one location can be accumulated with those from another, and that year-to-year changes can be detected. Although a measure of total population would have certain advantages, a determination of relative change seems adequate for the purpose of practical management.

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Needless to say, the breeding ground surveys are cooperative in nature. The Fish and Wildlife Service, the Canadian Wildlife Service, the Provincial game branches, and Ducks Unlimited, combine their manpower and equipment to cover all of the important waterfowl breeding areas in Canada. Service biologists cover the important areas in Alaska, while the State conservation agencies, with some help from the Service, carry on surveys in about 25 States.

Waterfowl Kill

During the 1952-53 waterfowl shooting season the Fish and Wildlife Service inaugurated a new method of measuring the waterfowl kill. The method functions through the cooperation of the Post Office Department and provides for a sampling of the hunters in each flyway in proportion to their occurrence in the various States. The objectives of the kill survey are to determine for each flyway, (1) the number of birds taken by hunters with an error not to exceed five percent; (2) the size of the average daily bag; and (3) the average number of times a hunter went afield during the season.

The mailing addresses for the questionnaire survey are obtained at the time duck stamps are purchased at Post Offices. The questionnaires are mailed out on the closing date of the shooting season in each State. Three weeks later, a follow-up questionnaire is mailed to those who have not answered the first questionnaire. The number of questionnaires mailed out and the number returned in each flyway is shown in the following table.

Flyway	No. of Hunters Receiving Questionnaires		No. of Hunters Responding		Percent Returned	
	56 - 57	55 - 56	56 - 57	55 - 56	56 - 57	55 - 56
Atlantic	10,287	10,539	7,125	6,917	69.3	65.6
Mississippi	10,374	10,820	7,542	7,017	72.7	64.9
Central	6,809	7,525	4,685	4,976	68.8	66.1
Pacific	7,478	7,316	5,284	4,859	70.7	66.4
Total	34,948	36,200	24,636	23,769	70.5	65.7

The 1956-57 series data includes a correction for differences in the percent of active hunters in the different response and final non-response groups within the sample contacts made. Analysis of the respondent groups revealed that small differences occurred in the proportion of non-active hunters reported from first versus second response groups. The largest discrepancy (Pacific Flyway) resulted in reducing the mean seasonal kill by approximately 1.7 percent; the lowest being approximately 0.1 percent. These corrections were not applied to the 1955-56 data tabulated.

The mean seasonal and daily kill reported for 1954-55 and 1955-56 in the 1956 Status Report of Waterfowl, Special Scientific Report No. 33, related to mean kill per hunter among all active duck hunters, goose hunters and active coot hunters respectively rather than to mean kill of ducks, geese and coots among all active waterfowl hunters. While we believe the mean of a specific universe of hunters, that is, duck, geese, or coots, to be a more meaningful statistic of hunter success, it may be misinterpreted unless the corresponding universe is also tabulated. Space limitations prevent tabulation of these data, therefore, means tabulated in this report relate to the mean kill of ducks, geese and coots among all active waterfowl hunters and relate to the total number shown each season. The use of this mean also facilitates preparation of this report within the time limitation under which it is prepared.

The final change in presentation as compared to earlier Status Reports includes the species totals. The 1956-57 and 1955-56 totals herein include retrieved totals, whereas species totals in the 1954 to 1956 Status Reports of Waterfowl included both retrieved and unretrieved totals.

Pacific Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1955-56 and 1956-57 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1956-57	1955-56	Percent Change 1955-56 to 1956-57
Mallard	874,266	1,070,847	- 18.36
Pintail	553,402	525,935	+ 5.22
American Widgeon	347,893	375,552	- 7.36
Green-winged Teal	302,746	240,582	+ 25.84
Shoveler	157,501	149,577	+ 5.30
Ruddy Duck	66,651	63,517	+ 4.93
Blue-winged Teal	61,095	73,495	- 16.87
Canvasback	56,935	74,156	- 23.22
Goldeneye	36,938	31,802	+ 16.15
Scaup	36,377	49,629	- 26.70
Cinnamon Teal	35,415	27,287	+ 29.79
Gadwall	27,849	33,728	- 17.43
Redhead	23,589	47,012	- 49.82
Bufflehead	16,777	34,648	- 51.58
Merganser	16,643	25,533	- 34.82
Wood Duck	10,834	16,936	- 36.03
Scoter	3,395	21,594	- 84.28
Ringneck	2,266	13,025	- 82.60
Others	330	518	- 36.29
Tot. Retrieved Ducks	2,630,902	2,875,373	- 8.50
Tot. Ducks not Retr.	422,005	546,642	- 22.80
Tot. Duck Kill	3,052,907	3,422,015	- 10.79
Canada Goose	91,442	73,123	+ 25.05
Snow Goose	67,455	78,891	- 14.50
White-fronted Goose	54,906	49,795	+ 10.26
Cackling Goose	54,092	53,310	+ 1.47
Brant	18,721	17,646	+ 6.09
Tot. Retrieved Geese	286,616	272,867	+ 5.04
Tot. Geese not Retr.	44,329	39,211	+ 13.05
Tot. Goose Kill	333,945	312,078	+ 7.01
Tot. Retrieved Coot	150,585	175,772	- 14.33
Tot. Coot not Retr.	38,005	56,791	- 33.08
Tot. Coot Kill	188,590	232,563	- 18.91

Pacific Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag; Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey

		1956-57	1955-56	Percent Change 1955-56 to 1956-57
Number of Potential Hunters				
Over 15*		396,921	380,653	+ 4.27
Under 16		42,192	37,299	+ 13.12
		439,113	417,952	+ 5.06
Number of Active Hunters**				
Over 15		316,979	318,538	- 0.49
Under 16		31,231	28,078	+ 11.23
		348,210	346,616	+ 0.46
Average Times Hunted**		4.327	4.412	- 1.93
Average Seasonal Bag**				
Over 15	Ducks	7.925	8,615	- 8.01
	Geese	.876	.814	+ 7.62
	Coot	.414	.493	- 16.02
Under 16	Ducks	3.804	4.675	- 18.63
	Geese	.284	.487	- 41.68
	Coot	.620	.877	- 29.30
Average Seasonal Number Not Retrieved**				
Over 15	Ducks	1.242	1.618	- 23.24
	Geese	.134	.118	+ 13.56
	Coot	.099	.132	- 25.00
Under 16	Ducks	.911	1.116	- 18.37
	Geese	.059	.057	+ 3.51
	Coot	.220	.308	- 28.57
Average Daily Bag**				
Over 15	Ducks	1.832	1.953	- 6.19
	Geese	.202	.184	+ 9.78
	Coot	.096	.112	- 14.28
Under 16	Ducks	.879	1.060	- 17.07
	Geese	.066	.110	- 40.00
	Coot	.143	.199	- 28.14

* Individuals who purchased a Duck Stamp with intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Pacific Flyway

As mentioned in the section under Scope of Investigations and Methods Used, it was not possible for the Bureau of Sport Fisheries and Wildlife to conduct the winter survey in Mexico in January 1957. Since there is some variation in the proportion of some species of Pacific Flyway waterfowl that winter in Mexico from year-to-year, there is some question as to the degree to which the data taken in Alaska, Canada, and the United States represents trends in the wintering population for the entire flyway. This is particularly true with the pintail, gadwall, baldpate, shoveler, green-winged teal, redhead and scaup. Mallards, most of the geese, swan, and the bulk of the coot winter in the United States and Canada, so it is likely that the data for these species is reasonably reliable as indicators of trends in wintering population.

Although it was not possible for Bureau representatives to make the regular waterfowl survey at the scheduled time, it was possible for waterfowl technicians from California to make a special survey trip in February to census the black brant areas in Baja California (Mexico). The data for black brant, therefore, are comparable to 1956.

Percent Change in Pacific Flyway Population Index Figures for Ducks, Geese, Brant, Swan, and Coot - January 1956 to January 1957
(Comparable Coverage)

Area	Ducks	Geese	Brant	Swan	Coot	Total
Alaska	+40	+155				+50
Canada *	+16	+ 95	-35	- 3	+21	+18
Pacific Flyway States	-14	- 22	+ 3	- 7	+ 6	-12
Baja California (Mexico)			+54			
Total	-14	- 22	+28	- 7	+ 6	-12

* British Columbia

Species Composition - Pacific Flyway, 1956 and 1957 (Comparable Coverage)

Species	Percent of Birds Identified 1956	1957	Percent Change
Pintail	30.4	30.0	- 14.5
Mallard	20.1	22.0	- 4.7
Baldpate	15.8	10.1	- 44.5
Coot	9.5	11.7	+ 6.2
Snow Goose	4.9	4.9	- 14.4
Green-winged Teal	2.9	2.7	- 19.1
Shoveler	2.9	2.0	- 38.4
White-fronted Goose	2.4	1.3	- 53.0
Cackling Goose	2.1	1.6	- 36.0
Canada Goose	1.9	2.5	+ 12.7
Scaup	1.9	2.5	+ 13.8
Black Brant	1.3	1.9	+ 27.6
Ruddy Duck	.9	1.1	+ 15.8
Canvasback	.7	2.2	+166.2
Whistling Swan	.6	.6	- 7.2
Scoter and Eider	.5	1.2	+118.8
Goldeneye	.3	.6	+ 67.2
Redhead	.3	.1	- 82.5
Merganser	.2	.3	+ 2.5
Gadwall	.2	.2	- 29.7
Bufflehead	.1	.2	+ 0.8
Ross' Goose	.1	.1	-
Ringneck	Tr.	Tr.	-
Wood Duck	Tr.	Tr.	-
Blue-winged Teal	Tr.	.2	-
Old Squaw	Tr.	Tr.	-
Trumpeter Swan	Tr.	Tr.	+ 20.6
Emperor Goose		Tr.	-
Total	100.0	100.0	- 12.4

Summary of Pacific Flyway Winter Survey Data

By reason of the lack of data from wintering areas in Mexico, relatively little can be said regarding the trend in wintering populations throughout the flyway. However, on the basis of species which do not regularly move into Mexican wintering areas in significant numbers, the following comments can be made:

Ducks - Based on wintering areas in the United States and north there would appear to have been a decrease in wintering ducks in the Pacific Flyway in 1957 as compared to the previous year. However, the decrease was mainly among pintail, baldpate, green-winged teal, and shoveler, which collectively make up over 50 percent of the ducks in the flyway, and which regularly migrate into Mexico in rather large numbers. It is of interest to note that the mallard, which makes up about one-fifth of the total wintering population, remained unchanged.

Geese - The 1957 goose index is 25 percent below the average for the past eight years, and compared to individual years is:

22	percent below	1956
15	percent below	1955
16	percent below	1954
22	percent below	1953
19	percent below	1952
59	percent below	1951
	equal to	1950

Among the geese, snows, cackling, and white-fronts were down, while Canadas were up slightly.

Brant - The 1957 brant index is one percent above the average for the past eight years and compared to individual years is:

27	percent above	1956
3	percent above	1955
5	percent above	1954
10	percent below	1953
17	percent below	1952
28	percent above	1951
8	percent below	1950

It is of interest to note that the increase during 1957 reverses a general decline in population which apparently began in 1953.

Swan - The 1957 swan index is 37 percent above the average for the past eight years, and compared to individual years is:

8	percent below 1956
21	percent above 1955
57	percent above 1954
52	percent above 1953
114	percent above 1952
34	percent above 1951
148	percent above 1950

Breeding Ground Surveys

ALASKA

Weather and Water Conditions

The spring break-up came about two weeks earlier than average everywhere in Alaska except on the Seward Peninsula, in the Kotzebue Sound area and north of the Brooks Range. In the latter areas the break-up was at an average date. The phenology of the season was rapid and nesting conditions appeared optimum in most areas, except for local, temporary flooded conditions which quickly subsided following the spring run-off.

During July, extensive fires damaged waterfowl habitat. On July 16, R. R. Robinson of the Bureau of Land Management supplied the following estimates for three fires in the Innoko Valley (Stratum III, density 14.5 ducks per square mile): Holikachuk fire - 200,000 to 300,000 acres, Iditarod fire - 192,000 acres, and Halfway House fire - 45,000 acres. From the above estimates, an extrapolated figure of about 100,000 ducks would be deprived of their nesting habitat. This is also a prime breeding area for white-fronted and lesser Canada geese. The three fires enumerated above are probably the most damaging to waterfowl habitat, but may not depress the over-all production too greatly with optimum conditions existing elsewhere.

Breeding Population Indices

The total breeding population of game ducks for Strata II through V indicated no change from 1956, although there has been a measurable change in some of the species (Tables 1 and 2). A 15 to 20 percent increase in scaup, which largely migrate to the Atlantic Coast, was offset by a decrease of 20 percent among the other game species which funnel into the Pacific Flyway. There was also a 15 to 20 percent decrease in scoters with old squaw remaining static. As indicated in Table 1, the lower density strata showed an increase while the high density areas had a considerable decrease in breeding population. All the data given in the tables are comparable between 1956 and 1957.

Table 1 - Statistical Summary - Alaska Waterfowl Breeding Population

Stratum Number	Location	Area Sq.Mi.	No. of Transects	Sq.Mi. Sampled	Mean Density Ducks Per Square Mile		Population Index Total Ducks		Population Index Game Ducks	
					1956	1957	1956	1957	1956	1957
	Tanana-Kuskokwim	8,900	9	36						
	Nelchina	2,250	7	28						
	Innoko	1,000	2	8						
II	Total	12,150	18	72	8.6	8.9	104,000	107,800	71,900	90,380
	Nelchina	1,750	8	32						
	Ft. Yukon	3,000	6	24						
	Koyukuk	4,650	10	40						
	Bristol Bay	9,200	15	60						
	Innoko	2,500	6	24						
	Yukon Delta	17,500	35	140						
	Noatak	550	2	8						
	Seward Pen.	2,000	10	40						
III	Total	41,150	92	368	12.5	14.5	513,600	589,700	286,500	360,250
	Ft. Yukon	2,800	14	56						
	Yukon Delta	8,700	15	60						
	Kotzebue Sd.	4,800	12	48						
	Norton Sd.	700	4	16						
IV	Total	17,000	45	180	27.1	21.0	463,700	356,700	326,200	256,300
	Northway	700	5	20						
	Minto	950	7	28						
V	Total	1,650	12	48	47.8	32.4	79,000	53,600	70,200	51,400
Alaska Total		71,950	167	668	16.2	15.5	1,160,300	1,107,800	754,800	758,330

Table 2 - Waterfowl Population Index, Alaska - Comparative Data - 1956 - 1957

Species	Stratum II		Stratum III		Stratum IV	
	1956	1957	1956	1957	1956	1957
Scaup	32,300	54,450	141,000	201,000	142,300	161,300
Pintail	16,900	8,750	93,200	103,900	111,900	65,000
Mallard	2,300	5,500	26,600	22,400	19,500	9,300
Baldpate	7,800	4,300	12,300	18,250	42,700	5,400
Bufflehead	2,300	33,100	2,550	4,150	2,800	2,500
Canvasback	-	-	1,500	5,900	2,800	9,300
Goldeneye	8,600	3,200	4,200	500	1,850	2,800
Green-winged Teal	-	1,080	2,550	3,550	1,850	700
Shoveler	1,700	-	2,550	550	500	-
Scoter	26,700	17,420	185,000	178,500	108,300	67,500
Old Squaw	5,400	-	42,100	50,650	29,200	25,000
Eider	-	-	-	300	-	7,900
Total	104,000	107,800	513,600	589,700	463,700	356,700

Continued --

Table 2 - Continued

Species	Stratum V		Total		Trend
	1956	1957	1956	1957	
Scaup	48,600	25,400	364,200	442,150	+18 percent
Pintail	550	6,300	222,550	183,950	-18 percent
Mallard	7,450	8,700	55,850	45,900	-18 percent
Baldpate	3,300	5,100	66,100	33,050	-50 percent
Bufflehead	8,500	3,100	16,150	22,850	+28 percent
Canvasback	1,000	800	5,350	16,000	+66 percent
Goldeneye	550	1,400	15,200	7,950	-50 percent
Green-winged Teal	250	600	4,650	5,930	+22 percent
Scoter	8,800	1,600	328,800	265,020	-18 percent
Shoveler	-	-	4,750	550	-90 percent
Old Squaw	-	600	76,700	76,250	Same
Eider	-	-	-	8,200	
Total	79,000	53,600	1,160,300	1,107,800	- 5 percent

Production Data

The ground study crews at Selawik and Northway report a good hatch and large brood size among the early nesting species. Average brood size this year 6.9 young compared with 6.6 young in 1956 and brood density slightly better than in 1956. As of July 20, few scaup broods had appeared, but the breeding population as derived from ground studies at Selawik showed a considerable increase in scaup and prospects for a good scaup hatch appear favorable.

In view of no change in size of the breeding population, favorable production prospects, but some loss due to extensive fires, it is estimated that the 1957 fall flight from Alaska will be about the same as in 1956.

NORTHERN ALBERTA AND NORTHWEST TERRITORIES

Weather and Water Conditions

Weather conditions during the period were rather difficult to evaluate. In the first place we began the survey earlier than we normally do, and a season that started out to be early had a relapse and ended up as a cold late one. We first encountered ice on the lakes May 28 in latitude 57° 23'. On June 3 south of Great Slave Lake in latitude 62° 10' new ice had formed on what little open water there was around the edges of the lakes and as we proceeded east into the forest tundra open water became scarcer and snow more abundant until finally there was no open water and the ground was completely white. This condition prevailed throughout the survey period; new ice forming every night in forest tundra with showers becoming so thick as to be almost a continuous snow storm. Almost an inch of ice formed at Aklavik the night of June 12 and on a flight to Yellowknife the following day we encountered intermittent snow and freezing rain the entire distance.

South of latitude 58° conditions were quite dry and there was little temporary surface water. North of 58° water levels were high and temporary water areas, flooded meadows and flats, were most numerous in the Slave River parklands and in the Lac La Martre-Providence area. Water levels continued high all the way north, the MacKenzie Delta being almost entirely flooded, particularly on the treeless delta.

It should be borne in mind that, in the north, the scarcity of water is never a problem and temporary waters, if they occur, are not duck breeding habitat. Too much water can be a liability, as it was this year on the MacKenzie Delta.

Breeding Population Indices

A perusal of the following table will reveal that, with one exception, prairie nesting ducks increased, which was to be expected with the drying of the prairies in the south. We even saw coots on flooded meadows of the Slave River parklands north of 60°, our first observation of this species north of Lake Claire. The one exception, canvasback, occurs in such small numbers in the survey area as to be insignificant.

The only species that changed significantly were baldpate, up 30 percent; green-winged teal, down 34 percent; bufflehead, down 23 percent; goldeneye, up 74 percent; merganser, down 19 percent; ringneck duck, down 26 percent; and blue-winged teal, up 116 percent. Canada geese and swan were also down considerably.

Ducks commonly shot for sport were down six-tenths of one percent and all species lumped together increased less than one-half of one percent.

Total Breeding Population Indices - 1955 - 1957 - Northern Alberta and Northwest Territories

Species	1955	1956	1957	Percent Change 1956-1957
Scaup	1,150,100	1,219,100	1,120,300	- 8
Pintail	105,600	277,700	302,300	+ 9
Mallard	293,100	466,000	498,400	+ 7
Baldpate	228,500	301,100	261,500	+ 30
Shoveler	21,750	41,800	42,700	+ 2
Green-winged Teal	79,100	107,600	70,400	- 34
Canvasback	29,700	20,800	18,500	- 11
Goldeneye	86,600	32,900	57,300	+ 74
Bufflehead	160,950	120,700	92,500	- 23
Ringneck	18,050	54,800	40,400	- 26
Redhead	28,950	22,000	25,000	+ 14
Blue-winged Teal	11,100	9,000	6,200	+116
Gadwall	-	-	2,600	-
Ruddy Duck	-	-	6,200	
Total Favored Ducks	2,213,500	2,573,500	2,557,500	- 1
Scoter	706,250	812,200	859,400	+ 8
Merganser	93,600	130,100	105,400	- 19
Old Squaw	106,750	169,700	179,600	+ 6
Total Ducks	3,120,100	3,685,500	3,701,900	N.C.
Canada Goose	22,700	63,300	21,000	- 67
White-fronted Goose	2,800	7,800	7,800	N.C.
Swan	11,750	15,050	11,400	- 24

Production Data

The lone drake factor was 52 percent, an increase of approximately 10 percent over last year. This would indicate an earlier season if it could be relied upon to be of any significance in the north. However, such was not the case and the only logical conclusion that can be drawn is that the early warm spell induced early nesting which may have suffered during the resumption of freezing weather.

Therefore, it is quite probable that the early nesting mallards and pintails had little success north of 60°. The late nesters, of course, would not be affected but as many of these decreased in production in the north for all species.

Conclusions

In view of the adverse weather conditions during early June, it is estimated that the fall flight from the area will be somewhat reduced as compared to 1956.

SOUTHERN ALBERTA

Weather and Water Conditions

The spring of 1957 was the earliest we have witnessed since the beginning of these Canadian surveys. Phenologically it was two to three weeks advanced over normal with seeding of grain being possible in April in southern Alberta. This practice usually occurs about mid-May. Unseasonably warm spring temperatures in the 70's and 80's were responsible for this early season and forced vegetation so that aspen were leaved by early May. Many emergents were already at June heights when the survey began.

While water conditions were not critical to the farmer during May, many areas were at or near the critical stage for waterfowl. The numbers of potholes dropped to the lowest figure for all strata since the beginning of our aerial surveys. In Stratum A the number of water areas was 47 percent below the 1956 figure and 48 percent below our six-year average (Tables 1 and 2). Similar figures for Stratum B and C, respectively, show numbers of water areas to be down 26 percent and 29 percent from 1956 figures and down 22 percent and 38 percent from the six-year average. With Stratum C losing 40 percent of its water areas in 1956 and 38 percent more this year, it is not difficult to visualize the extent to which the drying trend progressed in southern Alberta. The number of water areas continued to decrease through the summer with the additional loss averaging 37 percent for the survey area (Table 3).

Table 1 - Water Areas on Aerial Transects, May 1956 and 1957

	Strata A		Strata B		Strata C		Province	
	1956	1957	1956	1957	1956	1957	1956	1957
Ponds Per Square Mile	16.00	8.45	22.91	16.88	7.18	5.06	16.59	11.05
Estimated Total Ponds	353135	186667	598024	442270	115702	81595	1066861	710532
Change		-47%		-26%		-29%		-33%

Table 2 - Water Areas on Aerial Transects, May 1957

	Stratum A		Stratum B		Stratum C		Province	
	Six-Yr. Average	1957	Six-Yr. Average	1957	Six-Yr. Average	1957	Six-Yr. Average	1957
Estimated Ponds	358186	186667	568023	442270	131661	81595	1057878	710532
Percent Change		-48		-22		-38		-33

Table 3 - Water Areas on Aerial Transects, May and July, 1957

	Stratum A		Stratum B		Stratum C		Province	
	May	July	May	July	May	July	May	July
Total Ponds Seen	2225	1429	3203	2082	433	224	5861	3735
Ponds Per Square Mile	8.45	5.43	16.88	11.01	5.06	2.62	11.05	6.94
Loss		-36%		-34%		-48%		-37%

Breeding Population Indices

Comparisons of breeding populations in 1956 and 1957 are given in Tables 4 and 5. Table 4 gives a comparison of the current season with last year while Table 5 compares this season with the six-year average. On a Provincial basis, there has been no change in over-all breeding populations. There was, however, a shift of ducks from the drying Strata A and C to the more favorable parkland area (Strata B). Strata A and C respectively, show a loss of 10 percent and 27 percent from 1956 populations and a loss of 10 percent and 33 percent compared to the six-year average. Conversely, Stratum B reflected an 18 percent and 28 percent increase. This increase in the parklands was sufficient to nullify the losses in the other strata.

The pintail populations was down 19 percent throughout the Province and the mallard population was up 18 percent from the 1956 figure. Total population indices were up only a trace from last year and are the second highest recorded, 1952 - 1957. There is little doubt, however, that because of the early leafing of the trees and appearance of emergent vegetation that the 1957 population may be the highest in six years, because the conditions under which they were observed were greatly inferior to those in 1955, the highest year.

Table 4 - Comparison of Aerial Waterfowl Population Indices - 1956-1957

	Stratum A		Stratum B		Stratum C		Province	
	1956	1957	1956	1957	1956	1957	1956	1957
Total Area Sq. Miles	22088	22088	26100	26100	16112	16112	64300	64300
Sample Sq. Miles	526.5	526.5	378.0	378.0	171.0	171.0	1075.5	1075.5
Total Ducks Seen	27096	24416	17004	20032	3596	3638	47696	47086
Total Ducks Sq. Mile	51.46	46.37	44.99	53.00	21.03	15.43	41.21	41.31
Index in Total Ducks	1136763	1024251	1174128	1383210	248553	248553	2649706	2656014
Percent Change		-10		+18		-27		N.C.

Table 5 - Comparison of Aerial Waterfowl Population Indices, 1957

	Stratum A		Stratum B		Stratum C		Province	
	Six-Yr. Average	1957	Six-Yr. Average	1957	Six-Yr. Average	1957	Six-Yr. Average	1957
Index in Total Ducks	1140872	1024251	1083333	1383210	369690	248553	2541094	2656014
Percent Change		-10		+28		-33		+4

Table 6 - Waterfowl Indices, 1957 - Part 1

Species	Stratum A			Stratum B		
	1956	1957	Percent Change	1956	1957	Percent Change
Pintail	406160	337782	- 17	179392	157710	- 12
Mallard	323770	329811	+ 2	463326	616341	+ 33
Baldpate	74671	58646	- 21	65598	87279	+ 33
Shoveler	97995	82306	- 16	61040	63526	+ 4
Gadwall	38594	22317	- 42	40049	35630	- 11
Blue-winged Teal	49082	48165	+ Tr.	81479	83274	+ 2
Green-winged Teal	6964	8977	+ 29	15191	21958	+ 45
Scaup	100177	106805	+ 7	128019	193302	+ 51
Canvasback	8306	8474	+ 2	36320	44054	+ 21
Redhead	18039	14347	- 20	33006	27344	- 17
Ruddy Duck	5789	1258	- 78	12750	11048	- 13
Bufflehead	2433	1846	- 24	13120	15329	+ 17
Goldeneye	1930	755	+ 61	3729	2624	- 30
Ringneck	1007	-	-	2624	-	-
Scoter	1846	1762	- 5	38530	23891	- 38

Table 6 - Waterfowl Indices, 1957 - Part 2.

Species	Stratum C			Province		
	1956	1957	Percent Change	1956	1957	Percent Change
Pintail	121167	99685	- 18	706719	595177	- 16
Mallard	115514	91770	- 21	906610	1037922	+ 16
Baldpate	16583	10741	- 35	156851	156666	- Tr.
Shoveler	11495	8857	- 23	170530	154689	- 9
Gadwall	6595	2827	- 57	85238	60774	- 29
Blue-winged Teal	3392	1508	- 56	133953	133947	- Tr.
Green-winged Teal	4711	118	- 96	26866	31123	+ 16
Scaup	39007	26758	- 31	267203	326765	+ 22
Canvasback	8857	1508	- 83	53483	54036	+ 1
Redhead	7914	3392	- 57	58959	45083	- 24
Ruddy Duck	1319	-	-	19813	12306	- 38
Bufflehead	942	-	-	16495	17175	+ 4
Goldeneye	754	1319	+ 75	6413	4698	- 27
Ringneck	-	-	-	3631	-	-
Scoter	565	-	-	40941	25653	- 37

The progress of the breeding season at the time of the survey is guaged by the lone males component. These data have been summarized only for the early breeders, pintails, mallards and canvasback. These results are given in Table 7.

Table 7 - Percent Lone Males in Early Nesting Species (Pintail, Mallard and Canvasback)

Year	Stratum A	Stratum B	Stratum C	Province
1956	86%	87%	71%	84%
1957	90%	92%	89%	90%
Five-Year Average	79%	85%	72%	80%

Production Indices

Table 8 presents the summation of our aerial production data for 1957 and illustrates far better than words the healthy condition of this year's waterfowl crop.

Conclusions

Since the breeding population was at least as large as in 1956, and may have been larger, and since production indices were well above average, it is estimated that the fall flight from southern Alberta will be considerably larger than last year.

Although the number of coot broods increased, the breeding population was smaller than in 1956. On this basis, it is estimated that the fall flight of this species will remain about the same.

Table 8 - Aerial Production Data - 1956 - 1957

	Strata A		Strata B		Strata C		Province	
	1956	1957	1956	1957	1956	1957	1956	1957
Area Square Miles	22088	22088	26100	26100	16112	16112	64300	64300
Sample Square Miles	263.25	263.25	189.0	189.0	85.5	85.5	537.75	537.75
Total Broods Seen	1194	1353	978	1471	78	111	2250	2935
Brood Per Square Mile	4.53	5.14	5.17	7.78	0.91	1.29	4.18	5.46
Estimated Number of Broods	100059	113532	134937	203058	14662	20784	249659	337374
Potential Later Broods	148	126	111	66	22	24	281	216
Potential Broods Per Square Mile	0.56	0.48	0.59	0.35	0.25	0.26	0.52	0.40
Number Potential Later Broods	12369	10602	15399	9135	4029	4189	31796	23926
Total Index Broods	112428	124134	150336	212193	18690	24973	281454	361300
Broods Per Square Mile Index	5.09	5.62	5.76	8.13	1.17	1.55	4.38	5.61
Average Brood Size	6.11	6.21	6.04	6.34	5.20	5.70	6.04	6.25
Estimated Number of Young	686935	770872	908029	1345304	107188	132346	1702152	2261125

WASHINGTON

Weather and Water Conditions

Water conditions in the pothole habitat have improved further, and water conditions are good over the entire State, with the exception of the lower Yakima Valley. In this area a May flood caused some danage to nesting waterfowl. This was followed by unusually hot weather, which evaporated most of the shallow water areas.

Production Data

Estimates of the waterfowl breeding population, combined with brood studies to date, indicate a seven percent increase over 1956. This would raise the waterfowl index for the State to 569,000, the highest since 1952 (Table 1).

In eastern Washington it appears at the present time that blue-winged teal will be up around 345 percent; cinnamons and green-winged teal will be up 20 percent, and mallards, 13 percent. Pintail, baldpate and shoveler all show moderate decreases. Columbia and Snake River Canada goose breeding populations show a seven percent increase. In western Washington, mallards and wood ducks are both up about 50 percent. Blue-winged teal are up 13 percent.

Table 1 - Comparison of Waterfowl Production of Previous Years with that Anticipated for 1957

Region	1952	1953	1954	1955	1956	Est. 1957
Eastern Washington	684,300	364,500	377,500	366,500	468,500	472,000
Western Washington	31,000	38,000	35,000	25,300	64,900	97,000
State total	715,300	402,500	412,500	391,800	533,400	569,000

Conclusions

It is estimated that the fall flight from Washington will be somewhat larger than it was in 1956.

IDAHO

Weather and Water Conditions

The spring of 1957 will be remembered as a wet one. Precipitation levels were average or slightly above during March and April. May moisture was the highest on record for the past 42 years. There was a surprisingly small amount of destructive flooding, but stream courses were carrying a full load and reservoirs were running over when the rains ceased. There was no evidence of large-scale nest destruction due to the excessive run-off.

Breeding Population Indices

An aerial count was taken in the major goose nesting areas of the State for the third consecutive year. In most areas it was possible to tally birds as "pairs," "singles" and "groups." In heavy nesting populations this was not possible, however, and pairs were counted, singles were counted as pairs and groups were recorded as such. In Table 1 the "pairs" column includes the singles recorded as pairs. There was a 29 percent increase in the pairs counted and a 28 percent increase in the total of the groups counted for an over-all increase of 29 percent over 1956. Most noticeable increases were in the western portion of the Snake River drainage and the Gray's Lake and Dingle Marsh areas in eastern Idaho.

Table 1 - Idaho Canada Goose Aerial Count, 1955 - 1957

Area	Pairs			Groups			Totals		
	1955	1956	1957	1955	1956	1957	1955	1956	1957
Snake River Drainage									
Farewell Bend to Railroad Bridge	460	352	459	248	77	278	1168	781	1196
Payette River (mouth to Emmett)	110	109	120	41	21	101	261	239	341
Strike Dam to American Falls Dam	95	56	48	77	97	34	267	209	130
North Fork, including Island Park	24	37	66	173	143	148	221	217	280
South Fork	48	46	36	36	9	44	132	101	116

Continued --

Table 1 - Continued.

Area	Pairs			Groups			Total		
	1955	1956	1957	1955	1956	1957	1955	1956	1957
Mud Lake - Camas Nat'l. Wildlife Refuge Area	96	108	82	28	19	49	220	235	213
Gray's Lake Area	124	106	145	43	70	156	291	282	446
Blackfoot Reservoir Area	54	83	113	198	280	185	306	446	411
Bear River Drainage									
Dingle Marsh Area	171	140	269	132	197	176	474	477	714
Total	1182	1037	1338	976	913	1171	3340	2987	3847

Production Indices

Canada goose nesting surveys were continued in several areas of the State. The results, as shown in Table 2, do not indicate total estimated production. They show population trends based on the number and hatching success of nests found on the same areas covered in the same manner each year. On this basis, the estimated production on four areas with trend data for six years is 17 percent above last year and 12 percent above the average for the previous five years. The estimated production on six areas with trend data for four years is nine percent above last year and 11 percent above the average for the previous three years.

Unfortunately, it was not possible to run enough brood trend routes this year to justify reporting here. Based on the few that were done, and on reports from field personnel, it appears that the duck production is at least as high and probably slightly higher than last year. Brood counts on Class III broods indicate average (6.0) survival.

Conclusions

It is estimated that there will be an increase in the fall flight of geese from Idaho over 1956. The duck flight will be about the same or slightly higher than last year.

Table 2 - Comparison of Goose Production on Idaho Study Areas, 1952 - 1957

	Glenns Ferry	Home-dale	Blackfoot Reser-voir	Island Pk. Reser-voir	No. Fork Snake River	North Lake	Total*	
No. Nests Found								
1952	24	208	103	16	-	-	351	
1953	24	250	121	44	-	-	439	
1954	34	216	132	42	39	24	424	(487)*
1955	16	189	117	34	32	31	356	(419)*
1956	15	214	86	38	32	40	353	(425)*
1957	13	253	99	32	35	32	397	(464)*
No. Nests Hatched								
1952	16	103	75	12	-	-	206	
1953	11	180	74	36	-	-	301	
1954	9	169	78	36	34	19	292	(345)*
1955	1	125	81	19	21	26	226	(273)*
1956	6	123	61	34	31	34	224	(289)*
1957	8	194	50	23	25	25	275	(325)*
Average Hatch								
1952	5.1	4.7	4.7	4.0	-	-	4.7	
1953	5.4	5.0	4.8	4.6	-	-	4.9	
1954	4.6	5.5	4.5	4.1	4.8	4.4	5.0	(5.0)*
1955	4.0	4.8	4.8	2.7	4.5	5.2	4.6	(4.6)*
1956	6.0	5.1	5.3	5.4	4.9	5.1	5.2	(5.2)*
1957	5.1	5.3	4.0	4.1	5.5	4.7	5.0	(5.0)*
Estimated Production								
1952	82	484	352	48	-	-	966	
1953	60	900	355	166	-	-	1481	
1954	41	930	351	148	154	80	1470	(1704)*
1955	4	601	387	52	94	130	1044	(1268)*
1956	36	627	323	185	152	173	1171	(1496)*
1957	41	1030	201	95	136	118	1367	(1621)*

* Excluding North Fork and North Lake

( )* Including North Fork and North Lake

CALIFORNIA

Weather and Water Conditions

Precipitation in northeastern California was normal or slightly above normal for the second year. These conditions resulted in an abundance of water areas available during the nesting season throughout this section of the State.

Winter rains fell below normal in the central part of the State, but nesting conditions were not altered since most of the nesting occurs in the rice belt.

The spring was warm and dry, and migration again began early.

Breeding Population Indices

A comparative summary of nesting pairs of waterfowl for a five-year period is shown in the following table.

Estimated Total Nesting Pairs by Years

Species	1953	1954	1955	1956	1957
Mallard	40,380	35,695	34,500	29,410	38,210
Pintail	2,100	2,375	1,260	1,850	1,830
Gadwall	6,040	5,450	3,150	2,710	1,720
Cinnamon Teal	3,435	3,695	4,560	4,760	1,360
Redhead	3,760	6,405	4,220	4,430	1,100
Ruddy Duck	1,950	3,225	2,990	2,230	1,330
Shoveler	925	810	530	630	1,240
Scaup	235	150	180	340	990
Others	545	490	190	350	460
Total Pairs (Ducks)	59,370	58,295	51,580	46,710	48,240
Total Pairs (Coot)	25,150	16,110	12,070	12,870	11,805
Total Pairs (Canada Geese)	2,850	3,300	2,870	3,130	3,900

The following table presents the estimated total nesting pairs present during the spring of 1957 in each of the breeding areas within the State:

Estimated Total Nesting Pairs by Areas

Species	Sacramento Valley	Suisun Marsh	North San Joaquin Valley	South San Joaquin Valley	North-East California	Klamath Basin	North San Francisco Bay	Total
Mallard	26,920	760	1,430	2,830	3,170	2,990	110	38,210
Pintail	120	-	150	80	940	540	-	1,830
Gadwall	160	70	210	90	200	940	50	1,720
Cinn. Teal	280	80	320	120	280	280	-	1,360
Redhead	-	-	20	10	180	890	-	1,100
Ruddy	40	-	80	10	90	950	160	1,330
Shoveler	40	-	130	40	120	900	10	1,240
Scaup	-	-	-	-	80	910	-	990
Other Ducks	40	190	-	10	110	100	10	460
Total Ducks	27,600	1,100	2,340	3,190	5,170	8,500	340	48,240
Coot	5,600	40	750	480	1,600	3,300	35	11,805
Canada Geese					3,040	860		3,900

Conclusions

In view of the near normal weather conditions plus the fact that there was little change in the size of the breeding population (plus three percent) it is estimated that the fall flight of ducks from California will be about the same as in 1956.

A 25 percent increase in nesting pairs of Canada geese and good production which should result in an increase in the total fall population of this species.

NEVADA

Weather and Water Conditions

Spring weather throughout the early nesting season was generally wet and cold over the bulk of the State's waterfowl nesting habitat. This period was characterized by frequent rains and some snow in the higher elevations and added materially to the earlier water forecast. This condition was particularly significant in the northeastern section of the State. Despite the inclement weather, conditions were in general not adverse to waterfowlproduction as early brood surveys indicate good to excellent production on most trend areas.

Run-off on the Owyhee River and the Humboldt River in northeastern Nevada is forecast to range from 75 to 87 percent of normal. All reservoirs were at or near capacity at the start of the breeding season. This condition is very favorable to waterfowl production on these areas in that a gradual draw-down for irrigation minimizes nest loss due to flooding.

Streams flowing into the west-central region of Nevada from the California Sierras were predicted to flow from 75 to 85 percent of normal. This flow proved to be adequate in providing for capacity or very near capacity water storage for all major lakes, reservoirs and marshes affording waterfowl nesting habitat in this section of the State.

Production Data

Ducks: Production on the reservoir trend areas in northeastern Nevada appears to be comparable or slightly higher than last year. Production was up 75 percent last year over the preceding year

and is expected to reach the 1950 base year level this year. The abundance of Class I broods and the lack of Class III broods indicates a later hatch of from one to two weeks. Average brood size is comparable to past years

Production appears to be somewhat above normal in the remainder of the major nesting areas in west-central Nevada. The redhead gadwall, mallard and cinnamon teal are the principal nesting specie in this area. Production is estimated to be from one week to 10 days earlier this year throughout this area.

Geese. Canada goose production is comparable to last year at Washoe Lake. In good water years, such as the past two have been, total goose production is between four and five hundred birds on this area. This is the principal nesting area for Canada geese in Nevada. Another high density goose nesting area located just north of the Reno-Sparks area is the Spanish Springs Ranch. Production, this year, was up 87.0 percent from the static population of past years. Total estimated production on this area is 200 geese.

Canada geese breeding pairs increased one-third at Stillwater Wildlife Management Area with total production on comparable areas being up 50.0 percent. Average brood size was up to 3.7 young this year compared to the 2.6 young per brood observed last year. An additional 40 geese were produced at Leter Reservoir on the Management Area. This is the first time that any goose production has been observed on this area and is hoped to be indicative of an upward trend in the breeding population at Stillwater.

The molting population of 2,700 Canada geese at Pyramid Lake this year was 40.0 percent above last year's population.

Conclusion

Over-all duck production is forecast to increase from 5.0 percent to 10.0 percent in the western region. An increase from 10.0 percent to 20.0 percent is expected in the northeastern section of the State.

Canada goose production is generally up about 50.0 percent from last year and conditions seem to be indicative of a general build-up in the over-all breeding population for the western part of the State.

UTAH

Weather and Water Conditions

The spring run-off was slightly above normal throughout the State and unusual rains provided an abundance of water for all breeding areas. The peak of water reached the breeding areas after the Canada geese were hatched; however, some early duck nests were destroyed by rising water. This has apparently had little effect on total production.

Breeding Population Indices

The following table gives a comparative summary of the 1956 and 1957 aerial surveys:

Total Ducks Counted by Area and Square Mile as Determined from Aerial Surveys - 1956 and 1957

Route	Squared Miles Sampled		Total Ducks Counted		Ducks Per Square Mile	
	1956	1957	1956	1957	1956	1957
Box Elder County	48.0	48.0	2,971	962	61.9	20.0
Weber County	15.5	15.5	1,119	416	77.2	26.8
Davis County	14.2	14.2	1,742	313	122.6	22.0
Jordan River Clubs	6.2	6.2	1,971	402	317.9	64.8
Salt Lake County	6.7	6.7	201	64	30.0	0.9
Utah County	18.0	18.0	474	113	26.3	6.3
Total	108.6	108.6	8,478	2,270	78.1	20.9

Although the 1957 survey indicates a 57 percent decrease in the breeding population, this figure should be treated lightly. An abundance of water, considerably more than is usually present during the spring, permitted birds to scatter over a much greater area than in 1956.

Ground counts on State waterfowl refuges indicated a slight decrease in the breeding population of nearly all species.

Estimate of Total Breeding Pairs on Three State Refuges from Dike Line Census - 1956 and 1957

Species	Ogden Bay		Farmington Bay		Public Shooting Grounds	
	1956	1957	1956	1957	1956	1957
Canada Geese	87	78	36	36	12	12
Mallard	415	337	30	29	61	43
Gadwall	214	208	34	31	18	12
Pintail	170	96	41	39	18	16
Cinnamon Teal	490	429	102	58	79	17
Redhead	475	568	132	59	151	114
Shoveler	135	129	28	13	18	8
Green-winged Teal	15	10	2	4	1	2
Blue-winged Teal	30	45	2	1	1	1
Ruddy Duck	85	149	16	18	8	9
Baldpate	0	0	0	0	0	2
American Goldeneye	0	0	0	0	0	1
Scaup	0	0	0	1	0	0
Total	2,112	2,049	423	289	367	237

Species composition of the waterfowl breeding population in Utah was tabulated from ground and aerial census figures. Species composition of northern and southern half of the State was separated because of differences in habitat and, therefore, species used. No significant changes in species composition since the 1956 census were apparent, although several small fluctuations were evidenced.

Species Composition of Waterfowl Breeding Populations in Southern and Northern Utah - 1956 and 1957

Species	Northern Utah		Southern Utah	
	1956	1957	1956	1957
Redhead	39.1	49.8	9.8	16.6
Mallard	18.0	14.4	31.4	32.1
Cinnamon Teal	15.6	10.4	20.6	19.8
Gadwall	8.5	6.4	8.7	6.8

Continued --

Species Composition - Continued

Species	Northern Utah 1956	Northern Utah 1957	Southern Utah 1956	Southern Utah 1957
Ruddy Duck	7.9	8.4	11.5	5.5
Pintail	5.0	4.7	8.1	5.7
Shoveler	4.9	3.4	4.9	5.9
Blue-winged Teal	0.6	0.2	2.8	1.0
Green-winged Teal	0.4	1.1	1.9	5.1
Baldpate	0.0	0.3	0.0	0.5
American Goldeneye	-	-	-	-
Scaup	0.0	0.9	0.0	1.0
Total	100.0%	100.0%	100.0%	100.0%

Ground counts of Canada geese on various areas throughout the State in 1956, with the exception of Cutler Reservoir, were again conducted on these areas in 1957. The following table gives a comparison of birds counted on these areas.

Ground Counts of Breeding Populations in Selected Areas of Utah-1956 & 1957

Area	1956 Pairs	1956 Lone Male	1956 Lone Female	1956 Ind. Pop.	1957 Pairs	1957 Lone Male	1957 Lone Female	1957 Ind. Pop.
Clearlake Refuge	303	78	5	772	157	149	25	662
Lower Sevier Lakes	85	35	4	248	50	17	1	136
Gunnison Reservoir	12	2	2	32	8	5	1	28
Scipio Lake	13	8		42	20	15		70
Fool's Creek Res.	3	6		18	4	3		14
Redmond Lake	17	1		36	15	9	1	50*
Olsen's Slough	38	11	6	110				
Rocky Ford Res.	2	10		24	6	8		28
Topaz Marsh	47	23	6	152	16	5	1	44
Total	520	174	23	1,434	276	211	29	1,032

* Olsen's Slough and Redmond Lake census figures are combined in the 1957 listing.

Population Indices

Brood counts were made on Canada geese only. Some new areas were censused in 1957 but will not be included here as comparisons with previous years would be impossible. Areas counted in 1956 and 1957 are listed in the following table. The included figures are actual counts and no attempt was made to estimate total populations.

Counts of Canada Goose Broods in Utah - 1956 and 1957

Area	Broods		Young		% Change in Tot. Young
	1956	1957	1956	1957	
Round Valley	5	20*	28	97*	+ 25
Cutler Reservoir	14	15	80	81	+ 1
Public Shooting Grounds	10	12	35	68	+ 94
Bear River Refuge and Vic.	320	310	1,600	1,400	- 12
Ogden Bay Refuge	54	61	248	317	+ 28
Farmington Bay Refuge	28	36	140	210	+ 50
Scipio Lake **	6	1	25	5	- 80
Fool's Creek Reservoir **	8	5	48	24	- 50
Redmond Lake **	10	8	56	41	- 27
Gunnison Reservoir **	17	11	92	55	- 40
Clear Lake Refuge	4	6	19	30	+ 58
Total	476	4785	2,371	2,328	- 1

* Count not comparable to 1956 because of more complete coverage. The 1957 count method will be followed in subsequent censuses of this area.

** These areas were difficult to count because of dense growths of vegetation.

Conclusions

In view of the decrease in breeding population of ducks and to the possible flooding of nests as a result of rising water during the nesting period, it is estimated that there will be a decrease in the fall flight of ducks from Utah as compared to 1956. The flight of Canada geese should remain about the same.

Central Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1955-56 and 1956-57 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1956-57	1955-56	Percent Change 1955-56 to 1956-57
Mallard	1,480,764	1,589,133	- 6.82
Green-winged Teal	405,228	316,462	+ 28.05
Pintail	353,088	325,425	+ 8.50
Blue-winged Teal	298,295	241,668	+ 23.43
Redhead	170,934	109,882	+ 55.56
Canvasback	144,368	91,497	+ 57.78
Shoveler	90,406	91,895	- 1.62
Gadwall	89,031	52,310	+ 70.20
American Widgeon	39,033	25,299	+ 54.29
Scaup	34,078	73,663	- 53.74
Ruddy Duck	22,474	31,600	- 28.88
Cinnamon Teal	18,414	18,997	- 3.07
Bufflehead	12,979	8,749	+ 48.35
Wood Duck	10,869	8,260	+ 31.59
Ringneck	10,294	48,303	- 78.69
Merganser	7,576	12,114	- 37.46
Goldeneye	4,827	9,636	- 49.91
Black Duck	2,462	2,539	- 3.03
Scoter	543	428	+ 26.87
Others	1,151	1,224	- 5.96
Tot. Retrieved Ducks	3,196,814	3,059,084	+ 4.50
Tot. Ducks not Retr.	520,847	544,633	- 4.37
Total Duck Kill	3,717,661	3,603,717	+ 3.16
Canada Goose	168,998	93,002	+ 81.71
Snow Goose	113,166	41,114	+175.25
Blue Goose	25,575	22,254	+ 14.92
White-fronted Goose	32,763	25,801	+ 26.98
Tot. Retrieved Geese	340,502	182,171	+ 86.91
Tot. Geese not Retr.	65,402	32,056	+104.02
Total Goose Kill	405,904	214,227	+ 89.47
Total Retrieved Coot	72,168	89,233	- 19.12
Total Coot not Retrieved	21,580	32,350	- 33.29
Total Coot Kill	93,748	121,583	- 22.89

Central Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1956-57	1955-56	Percent Change 1955-56 to 1956-57
Number of Potential Hunters				
Over 15*		489,434	519,134	- 5.72
Under 16		51,508	49,128	+ 4.84
		540,942	568,262	- 4.81
Number of Active Hunters**				
Over 15		418,535	442,749	- 5.47
Under 16		38,628	37,194	- 3.86
		457,163	479,943	- 4.75
Average Times Hunted**		4.874	4.467	+ 9.11
Average Seasonal Bag**				
Over 15	Ducks	7.183	6.690	+ 7.37
	Geese	.791	.402	+ 96.77
	Coot	.147	.180	- 18.33
Under 16	Ducks	4.924	2.607	+ 88.88
	Geese	.244	.108	+125.92
	Coot	.276	.258	+ 6.98
Average Seasonal Number Not Retrieved**				
Over 15	Ducks	1.159	1.164	- 0.43
	Geese	.151	.068	+122.06
	Coot	.045	.069	- 34.78
Under 16	Ducks	.925	.792	+ 16.79
	Geese	.056	.048	+ 16.67
	Coot	.069	.043	+ 60.47
Average Daily Bag**				
Over 15	Ducks	1.474	1.498	- 1.60
	Geese	.162	.090	+ 80.00
	Coot	.030	.040	- 25.00
Under 16	Ducks	1.010	.584	+ 72.94
	Geese	.050	.024	+108.33
	Coot	.057	.058	- 1.72

* Individuals who purchased a Duck Stamp with intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Central Flyway

As mentioned previously, it was not possible for the Bureau of Sport Fisheries and Wildlife to conduct the annual survey of waterfowl wintering areas in Mexico during January 1957. Inasmuch as the east coast and central portions of Mexico usually contain from about 20 to 60 percent of the total waterfowl recorded during the winter survey in the Central Flyway, there is question as to whether the data recorded in the Central Flyway States only are representative of trends in wintering population. This is particularly true in view of the fact that the wintering population recorded in Texas decreased nearly 3,700,000 birds as compared to 1956, apparently due to the prolonged drought in the State, and the species involved in the decrease are regularly found wintering in Mexico in large numbers.

On the basis of data taken in the Central Flyway States alone, ducks decreased 45 percent, geese decreased 36 percent, coot decreased 50 percent, and waterfowl collectively decreased 44 percent. On the same basis, the percent change by individual species was as follows:

Species Composition - Central Flyway States - 1956 and 1957

(Comparable Coverage)

Species	Percent of Birds Identified 1956	Percent of Birds Identified 1957	Percent Change
Mallard	31.0	63.6	+ 14.9
Pintail	27.9	7.5	- 85.0
Redhead	16.8	6.2	- 79.4
Snow Goose	6.8	7.0	- 42.3
Scaup	5.6	2.4	- 76.3
Baldpate	3.7	2.0	- 69.4
Canada Goose	2.7	3.5	- 26.6
Coot	2.0	1.8	- 50.1
Merganser	.7	1.4	+ 12.9
Green-winged Teal	.7	1.4	+ 20.9

Continued --

Species Composition - Central Flyway States - Continued

Species	Percent of Birds Identified 1956	1957	Percent Change
Blue Goose	.6	.8	- 20.1
Gadwall	.5	.9	- 6.6
White-fronted Goose	.3	.4	- 23.3
Shoveler	.3	.4	- 22.0
Goldeneye	.2	.4	+ 22.1
Canvasback	.2	.2	- 37.6
Blue-winged Teal	Tr.	Tr.	-
Ruddy Duck	Tr.	Tr.	-
Ringneck	Tr.	.1	-
Bufflehead	Tr.	Tr.	-
Mottled	Tr.	Tr.	-
Wood Duck	Tr.	Tr.	-
Trumpeter Swan	Tr.	Tr.	-
Whistling Swan	Tr.	Tr.	-
Total	100.0	100.0	- 44.1

Summary of Central Flyway Winter Survey Data

Due to a lack of data from the Mexican wintering areas there is reason to doubt that the data for some species in the preceding table are representative of changes in wintering population. However, some species winter almost wholly within the United States and some conclusions can be drawn from this group as follows:

Ducks - Although the over-all duck index decreased 45 percent as compared to 1956, it is significant to note that the decrease was mainly among pintails, redhead, scaup, and baldpate, all of which are regularly found in large numbers in Mexico. On the other hand, the mallard, which winters entirely within the United States, showed an increase of 15 percent.

Geese - Relatively few Central Flyway geese have ever been found in Mexican wintering areas. On this basis, it seems likely that the data recorded in the Central Flyway States are reasonably comparable. The 1957 population index for geese is 26 percent below the average of the past eight years and compared to individual years is:

17 percent below 1956
18 percent below 1955
41 percent below 1954
17 percent below 1953
3 percent above 1952
16 percent below 1951
47 percent below 1950

Among the geese, all species declined with the most noticeable drop taking place among the snows.

SOUTHERN SASKATCHEWAN

Weather and Water Conditions

The 1957 May pond index of 1 444,900 is down more than one million from the 1956 index of 2 488 900. This might seem to be shocking news, but closer inspection shows that the reduction is due in part to almost complete drying up of extensive "droughty" regions in southwestern and west-central Saskatchewan. It is also due to disappearance of the innumerable puddles and other ephemeral water areas throughout the grasslands and to a considerable extent in the parklands.

Average rainfall during the summer has been 31 percent below normal over most of Saskatchewan with certain western and southwestern areas suffering the worst drought conditions since 1947. Rainfall has favored the southeast while in the northeast rainfall has been far less than normal and at many points in Stratum B-East it has been negligible.

The July pond index is down to 10.9 per square mile. This is a 30 percent reduction from 1956 and amounts to only one-fourth of the July 1955 index of 41.1. The waterfowl nesting habitat in southern Saskatchewan is not dry yet but it is at the "minimum satisfactory" level to produce a crop of ducks. The western and southern regions showed the greatest water area losses but even the stable parklands lost a quarter of their ponds. Even under these conditions, however, the early produced duck crop should have adequate water in which to mature.

Breeding Population Indices

At first glance, our 1957 aerial index figure of 5,287,100 nesting ducks seems like quite a drop from the robust 1956 index of 6,700,000. Yet this 1957 index compares favorably with that of the very good 1955 season. Moreover it is substantially better than the population indices for any of the seven years preceding 1955.

Upon closer examination, we see that most of this drop can be accounted for by the quiet disappearance in 1957 of some 800,000 pintails (air index figure). The indicated decreases for all other species are quite minor and not significant. The May 1957 index for the all-important mallard can be considered almost identical with thos of 1956.

The 1957 drop in nesting waterfowl is most evident in the Saskatchewan grasslands (Strata A-West and C). The parklands are holding their own (Stratum B-East) or showing some slight improvements (A-East and B-West). This does not mean that the ducks are fleeing the grasslands in wild panic. It does mean that the unpredictable pintail has

Table 1 -
Species Indices (Aerial) - May, 1957 Waterfowl Population, Southern Saskatchewan.

Species	STRATA A-East	A-West	B-East	B-West	C	Province Totals
Pintail	129,100	395,700	419,300	135,400	105,800	1,185,300
Mallard	513,500	587,000	401,600	338,700	123,900	2,273,700
Baldpate	38,100	54,000	63,200	35,100	13,800	204,200
Shoveler	39,900	102,200	101,800	54,900	10,000	308,800
Gadwall	7,400	39,400	45,600	25,700	6,900	125,000
Blue-winged Teal	73,400	83,200	96,500	45,400	11,200	309,700
Green-winged Teal	6,500	10,200	12,300	4,300		33,300
Black Duck		1,500				1,500
Subtotal Surface Ducks	807,900	1,273,200	1,449,300	639,500	271,600	4,441,500
Scaup	60,400	129,900	129,800	123,400	11,500	455,000
Canvasback	34,400	24,800	114,000	40,300	1,400	214,900
Redhead	16,700	20,400	31,600	43,700		112,400
Ringneck	4,600					4,600
Ruddy Duck	4,600	11,700	14,000	1,700	2,300	34,300
Goldeneye			5,300	2,600		7,900
Bufflehead			10,500	5,100		15,600
Scoter				900		900
Subtotal Divers	120,700	186,800	305,700	217,700	15,200	845,600
Grand Total Ducks	928,600	1,460,000	1,754,500	857,200	286,800	5,287,100
Coots	20,400	48,900	136,600	30,400	5,600	241,900
Ponds	292,000	357,500	574,300	148,800	72,300	1,444,900

Table 2 -

Comparative Indices -May Waterfowl Population (Aerial) - Southern Saskatchewan

Species	Average 1949 through 1954	1955	1956	1957
Pintail	982,400	1,774,100	1,969,500	1,185,300
Mallard	1,307,400	2,032,600	2,473,200	2,273,700
Baldpate	182,900	235,800	301,100	204,200
Shoveler	215,200	351,500	389,800	308,800
Gadwall	80,200	108,800	111,100	125,000
Blue-winged Teal	178,700	375,500	384,600	309,700
Green-winged Teal	21,800	53,500	61,800	33,300
Black Duck		Trace		1,500
Subtotal Surface Ducks	2,968,600	4,930,800	5,691,100	4,441,500
Scaup	156,800	459,700	551,600	455,000
Canvasback	130,400	177,600	223,300	214,900
Redhead	44,200	85,400	153,300	112,400
Ringneck	8,100	19,800	9,200	4,600
Ruddy Duck	20,400	47,700	46,700	34,300
Goldeneye	8,500	4,800	15,800	7,900
Bufflehead	9,700	8,900	7,100	15,600
Scoter	50,900	9,400	16,000	900
Subtotal Diving Ducks	429,000	813,300	1,023,000	845,600
Total Ducks	3,397,600	5,744,100	6,714,100	5,287,100
Coots	96,300	201,500	306,500	241,900
Ponds	2,648,200	4,033,200	2,488,900	1,444,900

deserted this year those very marginal and undependable grassland habitats the species prefers. All other species seem to be reasonably secure in the more durable grassland habitats and in the parklands.

Production Indices

With the 1957 breeding population being slightly less than in 1956 it was interesting to find a 45.9 percent increase in the broods per square mile observed this year (5.4) as compared with last year (3.7). All of the strata are up but stratum B-East showed the greatest percent increase in broods observed per square mile (88 percent). In the Saskatchewan grasslands and western parklands, Class II and III broods predominated but Class I's were also common. The hatch in the remainder of the survey area was slightly later, but all three age classes of broods were present in about equal proportions.

This year's production pattern is somewhat similar to that of 1952, namely, there was an excellent early hatch with little re-nesting or late nesting taking place. This situation is in direct contrast to the record breaking 1955 season in which re-nesting played such an important part. The 1957 late nesting index is the lowest since 1951. This is certainly little cause for worry because it looks as if most of the ducks were satisfied with their first attempt and turned out quite a crop of ducklings.

It is of interest to note that on the Redvers Ground Study Area in southeastern Saskatchewan there was a definite decrease in the production of all species except mallard and pintail. The area was exceptionally dry however and may not be typical.

Table 3 - Summary of Air Data - July 1957 - South Saskatchewan

	Strata					
	A-East	A West	B-East	B-West	C	Province
Broods Per Sq. Mi.	5.811	4.265	8.023	4.122	2.272	5.400
Brood Index	84,840	160,492	280,965	63,891	25,651	615,839
PLB Per Sq. Mi.	2.334	.875	.898	.500	.208	.952
Late Nesting Index	34,076	32,926	31,448	7,750	2,348	108,562
Ponds Per Sq. Mi.	27.634	6.650	12.985	7.108	3.136	10.996
Pond Index	403,456	250.240	454,735	110,174	35,405	1,254,010
Coot Brood Per Sq. Mile	.599	1.247	4.904	1.540	.256	-
Coot Brood Index	8,755	46,925	171,738	23,870	2,890	254,178

Table 4 - Comparative Brood and Late Nesting Indices (Aerial) - Southern Saskatchewan - July Surveys, 1953 - 1957

	Species	1953	1954	1955	1956	1957
BRDS.	(Not speciated)	183,600	100,400	317,400	422,200	615,839
LATE NESTING INDICES	Pintail	32,900	11,500	79,400	18,200	5,385
	Mallard	107,900	82,900	180,400	79,700	41,507
	Baldpate	21,100	17,000	21,300	12,000	4,012
	Shoveler	13,400	5,200	22,800	12,000	2,243
	Gadwall	14,800	13,800	28,500	16,400	3,460
	Blue-winged Teal	35,400	24,100	77,600	54,300	11,767
	Green-winged Teal	3,500	5,500	8,000	2,200	1,381
	Subtotal Puddlers	229,000	160,000	418,000	194,800	69,755
	Scaup	28,500	11,300	44,300	26,200	27,504
	Canvasback	15,700	2,700	15,500	7,300	1,707
	Redhead	8,000	4,200	8,400	10,500	1,943
	Ringneck	3,000	4,500	3,700	100	204
	Ruddy Duck	14,000	18,000	20,000	21,300	7,449
	Goldeneye	0	1,800	0	0	0
	Bufflehead	500	0	900	0	0
	Scoter	2,500	1,200	4,100	900	0
	Subtotal Divers	72,200	43,700	96,900	66,300	38,807
	Grand Total Ducks	301,200	203,700	514,900	261,100	108,562
Coot Broods		8,380	4,400	21,000	81,800	254,178
Pond Index		2,551,400	3,037,100	3,793,700	1,753,200	1,254,010

Table 5 - Comparative Date, July 1957 Aerial Surveys, Southern Saskatchewa

	1956	1957	Percent Change
Broods Per Square Mile	3.7	5.4	+ 45.9
Brood Index	422,200	615,839	+ 45.9
Potential Later Broods Per Square Mile	2.28	0.95	- 58.4
Late Nesting Index	261,100	108,562	- 54.4
Ponds Per Square Mile	18.57	10.99	- 40.8
Pond Index	2,118,200	1,254,010	- 40.8
Coot Brood Index	81,800	254,178	+210.7
Broods Per Square Mile			
Strata AW	3.09	4.26	+ 37.9
Strata AE	3.09	5.81	+ 88.0
Strata BE	5.5	8.02	+ 45.8
Strata BW	3.34	4.12	+ 23.4
Strata C	1.45	2.27	+ 56.5
Potential Later Broods Per Square Mile			
Strata AW	2.8	0.87	- 70.4
Strata AE	3.4	2.33	- 31.5
Strata BE	2.17	0.89	- 59.0
Strata BW	1.26	0.50	- 60.3
Strata C	0.94	0.20	- 78.7
Ponds Per Square Mile			
Strata AW	13.36	6.65	- 50.2
Strata AE	49.80	27.63	- 44.5
Strata BE	17.10	12.98	- 24.1
Strata BW	14.40	7.10	- 50.7
Strata C	5.89	3.13	- 46.9
Coot Brood Per Sq. Mile			
Strata AW	0.45	1.24	+175.5
Strata AE	0.30	0.59	+ 96.7
Strata BE	1.55	4.90	+216.1
Strata BW	0.40	1.54	+285.0
Strata C	0	0.25	-

Conclusions

It is estimated that the decrease in breeding population will be balanced by an increase in production and that the 1957 fall flight of ducks from southern Saskatchewan will about equal that of 1956.

The coot flight should be somewhat larger than last year.

MONTANA

At the time this report was written, a summary of the Montana surveys had not been received. However, on the basis of a phone conversation with Mr. Cecil Williams on July 30, it appears that the breeding population index for Montana this year is 133,074 birds. This represents a decrease of 25 percent from 1956. In view of this decrease in breeding population, plus the probability that habitat conditions were unfavorable due to drought, it is estimated that the fall flight from Montana will be somewhat smaller than last year.

WYOMING

At the time this report was written, a summary of the Wyoming waterfowl survey had not been received. However, on the basis of a phone conversation with Mr. Cecil Williams, Central Flyway Representative, on July 30, it appears that the breeding population index for Wyoming this year is 139,551 birds, a decrease of 25 percent as compared to 1956. Production is above average and State technicians are reported to have concluded that fall flight of ducks from Wyoming would be somewhat greater than last year.

NORTH DAKOTA

Weather and Water Conditions

North Dakota in 1957 was drier than usual due to a lack of spring run-off and a dry month of May. The lack of numerous surface water areas may account for the decrease in breeding pairs. The month of June, was cold and wet. The rains of June were spotty, however, and many of the potholes dry in May remained dry through June and July. The Red River Valley (strata east) contained more water areas in July than it did in May but this was exceptional.

The index to number of individual ponds within the areas sampled is as follows:

Table 1 - North Dakota Water Index - 1957

Period	Strata			State Total	Ponds Per Sq. Mile
	West	Central	East		
May Ponds	141,520	253,536	36,576	431,632	6.1
July Ponds	71,720	100,379	26,656	198,755	2.8

The water index for the State in the spring of 1956 was 445,189 areas. On this basis, the number of water areas decreased only three percent between 1956 and 1957. However, the 1957 survey was conducted by a different crew and there may be question as to the comparability of the data.

Breeding Population Index

The 1957 breeding population index for North Dakota is presented in Table 2. Comparisons of these indices with those of past years are presented in Table 3.

Table 2 - 1957 Breeding Population Index - North Dakota

Species	Strata			Total
	West	Central	East	
Pintail	11,368	89,626	2,790	103,784
Mallard	24,360	140,668	3,720	168,748
Baldpate	-	2,010	-	2,010
Shoveler	-	10,450	-	10,450
Gadwall	-	33,359	-	33,358
Blue-winged Teal	4,466	93,243	1,860	99,569
Scaup	-	12,459	-	12,459
Canvasback	-	6,029	-	6,029
Redhead	-	11,253	-	11,253
Ruddy Duck	-	2,010	-	2,010
Total	40,194	401,106	8,370	449,670

Lone Drake Index - 65 percent

Table 3 - Summary of Waterfowl Breeding Population Trends in North Dakota 1950 - 1957

Species	Average Index 1950 - 1955	1956 Index	1957 Index	Percent Change from 1956
Pintail	325,080	306,553	103,784	- 66
Mallard	189,536	183,043	168,748	- 8
Baldpate	30,558	27,542	2,010	- 93
Shoveler	124,375	113,326	10,450	- 91
Gadwall	82,007	109,166	33,358	- 70
Blue-winged Teal	449,219	520,007	99,569	- 81
Scaup	41,257	45,187	12,459	- 72
Canvasback	35,016	55,228	2,029	- 89
Redhead	41,667	49,921	11,253	- 78
Ruddy Duck	20,078	20,370	2,010	- 90
Other	6,585	4,160	-	-
Total	1,345,378	1,434,503	449,670	- 69%
Coot	958	1,352	10,908	+706%

In view of the fact that the method of survey and the survey crew members changed between 1956 and 1957, the comparability of the data in Table 3 are questionable. Ground surveys in both 1956 and 1957 of

comparable sample areas indicate that the decrease in breeding population may have been in the neighborhood of 30 percent. There is little question, however, but that there was a decrease in the size of the breeding population.

Production Indices

An aerial production survey was conducted in North Dakota first time this year. The results are presented in Table 4.

Table 4 - Summary of North Dakota Aerial Survey Data, July 1957

	Strata			State
	West	Central	East	Totals
Size in square miles	23,474	33,861	13,330	70,665
Sample size in square miles	36	147.4	17	200.4
Broods actually seen	5	126	9	140
Broods per square mile	0.14	0.85	0.53	0.7
Brood Index	3,260	28,942	7,056	39,258
PLB actually seen	8	171	3	-
PLB per square mile	0.22	1.16	0.18	.56
Late nesting index	5,215	39,277	2,352	46,844
Ponds actually seen	110	681	34	-
Ponds per square mile	3.0	4.6	2	2.8
Pond Index	71,720	100,379	26,656	198,755
Coot brood seen	0	43	2	--
Coot broods per square mile	0	0.3	0.12	-
Coot Brood Index	0	9,877	1,568	11,445

Late Nesting Index by Species

Species	West	Central	East	State	Percent Comp.
Pintail	-	2,297	-	2,297	5.0
Mallard	2,086	19,754	1,176	23,016	49.1
Baldpate	-	459	-	459	1.0
Shoveler	-	689	-	689	1.5
Gadwall	-	2,756	-	2,756	5.9

Continued --

Late Nesting Index by Species - Continued

Species	West	Central	East	State	Percent Comp.
Blue-winged Teal	2,086	11,255	1,176	14,517	31.0
Green-winged Teal	-	-	-	-	-
Scaup	-	1,378	-	1,378	3.0
Canvasback	-	-	-	-	-
Redhead	1,043	-	-	1,043	2.2
Ringneck	-	689	-	689	1.5
Ruddy Duck	-	-	-	-	-
Total	5,215	39,277	2,352	46,844	

Brood Size

Class	Observed in Sample		Index		Ave. Size
	No. Broods	No. Ducklings	No. Broods	No. Ducklings	
II	52	265	15,138	82,673	5.1
III	45	236	12,157	77,433	5.2

It is noteworthy that the late nesting index exceeds the brood index which probably indicates a late hatch of considerable magnitude still to be brought off in North Dakota.

Noteworthy also is the species composition of the late nesting ducks. The mallard accounts for about half of the single drakes and pairs observed followed by blue-winged teal.

Conclusions

On the basis of a decrease in the breeding population of ducks, and the generally dry conditions which prevealed, it is estimated that the 1957 fall flight from North Dakota will be smaller than it was in 1956.

SOUTH DAKOTA

Weather and Water Conditions

Drought conditions of the past two years still prevailed during the early spring of 1957. However, in mid-May, moderate but continued rains greatly improved water conditions for the entire State.

The annual mid-May survey showed an average, State-wide density of 5.04 water areas (all types) per square mile. The 1957 density was 75 percent above the 1956 average density of 2.88 water areas per square mile, and 5 percent above the 1950-56, seven-year average of 4.80 water areas per square mile.

The physiographic distribution of water areas is shown in Table 1.

Favorable water conditions prevailed throughout South Dakota following the breeding population survey in May. Above normal temperatures during early July, however, reduced water levels considerably.

The average East-River mid-July water area density (excluding streams) was 3.02 water areas per square mile. This represents a 49 percent increase over the 1956 East-River mid-July density of 2.02 water areas per square mile, and is 31 percent above the 1953-56, four-year average of 2.30 water areas per square mile.

Table 1 - Mid-May Physiographic Distribution of Water Areas of all Types, and 1956 to 1957 Trends

Physiographic Division	Total Water Areas Per Square Mile		
	1956	1957	Change
Minnesota Valley	4.22	9.62	+128%
Prairie Hills	4.45	8.35	+ 88%
James River Valley	3.01	6.77	+125%
Missouri Hills	2.69	4.15	+ 54%
Missouri Plateau	2.49	3.74	+ 50%
State-wide Total	2.88	5.04	+ 75%

Breeding Population Indices

Although mid-May water area conditions were above normal, the number of breeding ducks decreased. Water conditions prior to mid-May were poor. Thus the low density of water areas that occurred during a large proportion of the waterfowl migration apparently attracted less breeding ducks than in 1956.

The 1957 State-wide breeding duck index was 5.34 ducks per square mile. The index was 30 percent below the 1956 index of 7.64 ducks per square mile, and 42 percent below the seven-year, 1950-56, average index of 9.26 ducks per square mile.

The physiographic distribution of the breeding population appears in Table 2.

Species composition of the breeding population as indicated by the number of males of each species observed on the ground transects appears in Table 3. Changes in composition from 1956 to 1957 were small. No change was indicated for blue-winged teal, gadwall, redhead, baldpate, canvasback, green-winged teal, and ringneck. Small increases occurred for the pintail (plus three percent) and scaup (plus three percent), and small decreases occurred for the mallard (minus one percent) and shoveler (minus four percent).

Table 2 - Physiographic Distribution of the Breeding Waterfowl Population and 1956 to 1957 Trends - Part 1

Physiographic Division	Uncorrected Ducks Per Sq.Mi.		* Corrected Ducks Per Sq.Mi.		
	1956	1957	1956	1957	Change
Minnesota Valley	8.75	2.92	10.59	3.78	- 64%
Prairie Hills	13.71	8.40	16.58	10.84	- 35%
James River Valley	7.89	4.71	9.55	6.08	- 36%
Missouri Hills	7.27	6.38	8.80	8.23	- 6%
Missouri Plateau	3.79	2.60	4.58	3.35	- 27%
State-wide Total	6.31	4.14	7.64	5.34	- 30%

* Corrected from ground transect data (East-River, exclusively) to compensate for unobserved females on nests. Corrected by 1.21 in 1956 and 1.29 in 1957.

Table 2 - Part 2

Physiographic Division	Estimate Minimum Population 1956	1957	Percent of State-wide Population 1956	1957	Change
Minnesota Valley	13,000	5,000	2%	1%	- 1%
Prairie Hills	134,000	88,000	24%	22%	- 2%
James River Valley	179,000	114,000	31%	29%	- 2%
Missouri Hills	67,000	62,000	12%	15%	+ 3%
Missouri Plateau	178,000	130,000	31%	33%	+ 2%
State-wide Total	571,000	399,000	100%	100%	

Table 3 - Species Composition of the 1957 Breeding Population in South Dakota and 1956 to 1957 Trends

Species	Number of Males 1956	1957	Percent Composition 1956	1957	Change
Blue-winged Teal	4677	2774	48.16	48.22	None
Mallard	927	467	9.54	8.12	- 1%
Pintail	617	515	6.34	8.95	+ 3%
Shoveler	1245	521	12.82	9.06	- 4%
Gadwall	599	363	6.16	6.31	None
Lesser Scaup	654	548	6.73	9.53	+ 3%
Redhead	327	212	3.37	3.68	None
Baldpate	333	227	3.43	3.94	None
Canvasback	52	38	0.54	0.66	None
Green-winged Teal	106	75	1.09	1.30	None
Ringneck	6	13	0.06	0.22	None

Table 4 - Comparisons of Minimum Species Breeding Populations in South Dakota

Species	1956 Minimum Population	1957 Comparison 1957 Minimum Population	Change	Percent Change	1950-56 Comparisons Ave. 50-56 Minimum Population	Change 1957	Percent Change
B.W.Teal	275,100	192,600	- 82,500	- 30%	238,400	-105,800	- 35%
Pintail	36,600	35,700	- 900	- 2%	116,400	- 80,700	- 69%
Mallard	54,600	32,400	- 22,200	- 41%	95,600	- 63,200	- 66%
Shoveler	73,300	36,200	- 37,100	- 51%	63,000	- 26,800	- 42%
Gadwall	35,100	25,200	- 9,900	- 28%	26,200	- 1,000	- 4%
Redhead	19,400	14,700	- 4,700	- 24%	18,800	- 4,100	- 22%
L. Scaup	38,100	38,100	None	None	32,300	+ 5,800	+ 18%
Canvasback	3,000	2,600	- 400	- 13%	3,100	- 500	- 16%
Baldpate	19,400	15,700	- 3,700	- 19%	5,700	+ 10,000	+175%
G.W.Teal	6,000	5,200	- 800	- 13%	1,200	+ 4,000	+333%
Ringneck	800	900	+ 100	+ 12%	-	-	-
Total	561,400*	399,300	-162,100	- 30%	660,700	-261,400	- 40%

* Ruddy Ducks eliminated from comparisons

Production Data

The 1957 mid-July survey indicated an average observed density of 0.400 broods per square mile (Table 5). This is 19 percent above the 1956 average of 0.336 broods per square mile and 25 percent below the 1953-56, four-year average of 0.533 broods per square mile.

The physiographic distribution of duck broods is shown in Table 5.

Average mid-July brood densities indicate large increases in brood production for the James River Valley (+ 123%) and Missouri Hills (+ 152%). Large decreases in production were indicated for the Minnesota Valley (- 100%) and Prairie Hills (- 55%).

The average 1957 mid-July brood size (all species) for 243 broods was 7.81 young per brood. This is 22 percent above the average 1956 brood size of 6.37 young per brood, and 7 percent above the 1953-56, four-year average brood size of 7.32 young per brood.

Table 5 - Mid-July Indices to Brood Densities and 1956-57 Trends in Eastern South Dakota

Physiographic Division	Duck Broods Per Square Mile		Percent Change
	1956	1957	
Minnesota Valley	0.111	0.000	- 100
Prairie Hills	0.788	0.353	- 55
James River Valley	0.132	0.295	+ 123
Missouri Hills	0.300	0.757	+ 152
East-River Totals	0.336	0.400	+ 19

Conclusions

The favorable outlook for brood production may be sufficient to offset the effects of the reduced breeding population for 1957. On this basis, it is estimated that the 1957 fall flight will be approximately equal to 1956.

COLORADO

Weather and Water Conditions

Water conditions at the beginning of the season were fair to good in all areas of the State except the eastern plains. There, it was still dry, a hold-over from the previous fall and winter. Snow-pack in the high mountains was far above normal, giving a good potential for water later in the season when run-off began. In April and May, abnormal amounts of precipitation were recorded over most of the State, causing flooding and setting back the season as much as two weeks in some areas. In most areas, marshes and pot holes contained water that had been dry for many years. Much of this came, however, after major duck flights had passed through, consequently, it had little effect on the size of the breeding population.

At the present time, water levels are still far above normal in lakes and streams in all areas. It is believed that water conditions are the best that this writer has ever observed for this time of the year, offering excellent conditions for waterfowl.

Breeding Population Indices

Examination of the duck breeding-pair estimates by area (see following table), revealed that the 1957 counts were down nine percent from 1956, up eight percent from 1955, and about the same as 1954.

Summary of Colorado Breeding Ground Conditions

Area	Total Estimated Breeding Pairs					
	1952	1953	1954	1955	1956	1957
			D U C K S			
San Luis Valley	-	-	6744	7504	6576	4828
North Park	-	5676	3808	2881	3844	3411
South Platte Valley	-	-	2188	1072	1803	1657
Cache la Poudre Valley	1029	1619	1320	1164	1518	2800
Yampa Valley	1790	1500	1540	2260	4126	3356
Brown's Park	291	372	217	48	15	208
White River Plateau [1]	580	480	-	-	-	-
South Park [1]	-	431	195	145	-	-
Total			16012	15074	17882	16260

Continued --

Summary of Colorado Breeding Ground Conditions - Continued

Area	Total Estimated Breeding Pairs 1952	1953	1954	1955	1956	1957
			GEESE			
Yampa Valley	120	130	110	20	84	87 2/
Brown's Park	21	12	8	15	6	8
Total	141	142	118	35	90	95

1/ White River Plateau not run because much snow remained in the area at the time of the count. South Park not covered due to insignificance of area and weather conditions at the time of the flight.

2/ Results on an intensive goose nesting study in this area has revealed these estimated breeding pair figures to be high. They are given here mainly for comparison with past estimates, and thus indicate the trend in status of this flock.

Species composition of the duck breeding population was very similar to past years (see table below). Mallards still make up the bulk of the breeding birds (61.2 percent), and no other species made up more than 10 percent of the total number.

Species Composition of the Colorado Breeding Population 1/

	Number				Percent Species Composition			
	1954	1955	1956	1957	1954	1955	1956	1957
Mallard	11295	9633	11027	9944	70.4	63.9	61.7	61.2
B.W.Teal	886	600	1010	1208	5.5	4.0	5.6	7.4
Pintail	873	750	710	1023	5.5	5.0	4.0	6.2
Gadwall	852	1874	1495	1150	5.3	12.4	8.3	7.1
Baldpate	552	211	376	276	3.4	1.5	2.1	1.7
Shoveler	542	220	387	375	3.4	1.5	2.2	2.3
Cinn. Teal	442	509	862	562	2.8	3.4	4.8	3.5
G.W.Teal	220	407	406	682	1.4	2.7	2.3	4.2
Redhead	109	352	807	739	0.7	2.3	4.5	4.5
Scaup	99	369	556	201	0.6	2.4	3.1	1.2
Ruddy	48	44	12	-	0.3	0.3	0.1	-
Bufflehead	-	-	12	-	-	-	0.1	-
Am.Merganser	114	105	222	100	0.7	0.7	1.2	0.6
Total	16012	15074	17882		100.0	100.0	100.0	100.0

1/ Data derived from permanent transect records set up for the 1956 season. Data are corrected for unidentified pairs.

Production Data

Early flooding in the Yampa Valley destroyed most goose nests so that final goose production was only a fraction of the previous years. The Brown's Park fared somewhat better, with final production about the same as 1956.

Conclusions

Considering the slightly reduced duck breeding population, the cold, wet spring, and current excellent water conditions, it is believed that the fall flight will be below that for last year, and probably similar to that for 1954. Geese present a far different picture. There were probably fewer geese produced from wild breeding flocks in northwest Colorado than ever before. This is definitely a cause for alarm and concern, and all protection possible should be given these birds.

NEBRASKA

Weather and Water Conditions

The entire sandhills region of Nebraska was under the influence of a severe drought at the outset of the 1957 breeding season. All the small lakes and potholes and many of the larger lakes and marshes were dry in mid-April and only a very limited amount of habitat was available to the early migrants, particularly in the eastern sandhills. However, above average amounts of rainfall in late April and May relieved the drought conditions and caused a gradual accumulation of surface water which made a relative abundance of habitat available to the late migrants.

Rainfall during June and July was sufficient to maintain most water areas in the western and central sandhills; however, many of the wet meadow and pothole areas in the eastern sandhills were lost during July when rainfall was slightly below average. The water levels in all lakes was excellent and no significant brood loss was noted as a result of the dry-up of these temporary-type water areas.

Breeding Population Indices

Table 1 - 1957 Waterfowl Population Indices

	Eastern	Central	Western	Total
Sq.Mi. in Study Area				
Stratum A	3,859	2,824	4,186	-
Stratum B	734	1,815	2,814	-
Observed ducks per sq.mi.				
Stratum A	8.4	10.9	13.2	-
Stratum B	0.0	3.2	*	-
Aerial Index**	32,299	36,569	55,297	124,165
Percent Non-breeders	3.5	3.4	6.6	-
Breeding Ducks (Aerial Index less Non-breeders)	31,182	35,340	51,648	-
Percent Lone Males	12.9	30.7	41.9	-
Correction for Nesting Hens	4,013	10,829	21,788	-
Corrected Breeding Duck Index	35,195	46,169	73,436	154,800

* Due to inclement weather, no counts could be made in the western Stratum B.

** Ducks per square mile x square miles in the study area.

Table 2 - Waterfowl Breeding Population Trends

1957 aerial index	124,165		
1956 aerial index	123,639	change to 1957	none
Average, 1954-56 aerial indices	123,324	change to 1957	+ 1%
1957 corrected breeding duck index	154,800		
1956 corrected breeding duck index	94,949	change to 1957	+63%
Average, 1954-56 breeding duck indices	119,255	change to 1957	+30%

These surveys indicate a very significant increase in the breeding population from 1956 to 1957 and a significant increase from the average of 1954-56 to 1957. Although no systematic water area data are recorded, observations indicate that these changes were directly related to the changes in available habitat.

As noted in Table 3, the most significant increases occurred in the blue-winged teal and shoveler indices, these species are the latest migrators through the sandhills. Pintails and canvasbacks also showed significant increases over 1956. Significant decreases were recorded for the gadwall, baldpate, green-winged teal, scaup, and ruddy duck indices; however, it should be noted that these species occur in only relative minor numbers.

Table 3 - Species Composition and Trends

	Eastern	Central	Western	Total	% of 1957 Index	1956 Index	% Change from 1956 to 1957
Mallard	2,813	6,682	17,304	26,799	17.3	25,835	+ 3.7
Gadwall	1,487	1,583	2,594	5,664	3.7	7,636	- 25.8
Baldpate	388	351	542	1,281	.8	1,743	- 26.5
Pintail	3,348	4,217	11,010	18,575	12.0	11,858	+ 56.6
G. W. Teal	-	176	-	176	.1	703	- 74.9
B. W. Teal	23,137	28,492	27,030	78,659	50.8	30,150	+160.9
Shoveler	3,731	2,814	7,158	13,703	8.9	5,201	+163.5
Redhead	194	1,149	3,790	5,133	3.3	4,324	+ 18.2
Canvasback	-	-	2,931	2,931	1.9	1,701	+ 72.3
Scaup	97	526	266	889	.6	3,522	- 74.8
Ruddy	-	179	811	990	.6	2,107	- 53.0
Cinnamon	-	-	-	-	-	151	-
Total	35,195	46,169	73,436	154,800	-	94,949	+ 63.0

Production Data

The first mallard and pintail broods were observed in the sandhills during the last week of May which indicated that the first nesting attempt was about average. Brood checks made July 17-19 in the eastern and western areas showed that of 65 broods observed, 71 percent were of age Class I, 13 percent of age Class II, and 17 percent of age Class III. This indicated that the major hatching peak did not occur until late July.

Aerial brood counts were made over two breeding ground survey routes in both the western and central sandhills on July 26 and over portions of two routes in the eastern sandhills July 27. Data from these counts showed 0.44 broods per square mile in the eastern, 0.58 broods per square mile in the central, and 1.86 broods per square mile in the western sandhills. No information enabling a comparison or the interpretation of these data are available.

An average of 6.8 ducklings were observed in the broods of all age classes.

Newly-hatched broods were observed as late as July 27. This indicated the lateness of the 1957 nesting season.

Conclusions

Aerial surveys of the Nebraska sandhill waterfowl breeding population showed a significant increase in breeding ducks from 1956 to 1957 and from the average of the three prior years in 1957.

It is estimated that the fall flight from the State of Nebraska will be considerably larger than in 1956.

Mississippi Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1955-56 and 1956-57 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1956-57	1955-56	Percent Change 1955-56 to 1956-57
Mallard	2,775,452	2,715,919	+ 2.19
Green-wing Teal	438,706	272,144	+ 61.20
Blue-wing Teal	407,538	266,052	+ 53.18
Pintail	242,933	146,019	+ 66.37
Black Duck	218,510	252,250	- 13.38
Scaup	211,140	192,852	+ 9.48
Canvasback	167,399	167,103	+ .18
Redhead	75,871	126,744	- 40.14
Ringneck	52,508	65,728	- 20.11
Gadwall	44,270	108,943	- 59.36
American Widgeon	41,428	60,207	- 31.19
Ruddy Duck	36,659	58,160	- 36.97
Shoveler	31,023	36,410	- 14.80
Merganser	29,722	45,310	- 34.40
Goldeneye	18,546	46,024	- 59.70
Bufflehead	18,402	25,034	- 26.49
Scoter	3,757	3,998	- 6.03
Wood Duck	3,035	167,294	*
Others	399	3,236	- 89.52
Total Retrieved Ducks	4,817,238	4,759,427	+ 1.21
Total Ducks not retrieved	1,107,297	1,072,396	+ 3.25
Total Duck Kill	5,924,535	5,831,823	+ 1.59
Canada Goose	178,540	121,941	+ 46.42
Blue Goose	46,563	36,226	+ 28.53
Snow Goose	32,997	19,751	+ 67.06
White-fronted Goose	8,007	4,351	+ 84.03
Total Retrieved Geese	266,107	182,269	+ 46.00
Total Geese not retrieved	37,328	49,898	- 25.19
Total Goose Kill	303,435	232,167	+ 30.70
Total Coot retrieved	377,315	392,114	- 3.77
Total Coot not retrieved	98,371	97,725	+ .66
Total Coot Kill	475,686	489,839	- 2.89

* No 1956-57 Open Season on Wood Duck

Mississippi Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1956-57	1955-56	Percent Change 1955-56 to 1956-57
Number of Potential Hunters				
Over 15*		1,016,338	1,012,762	+ 0.35
Under 16		94,193	60,825	+ 54.86
Number of Active Hunters**		1,110,531	1,073,587	+ 3.44
Over 15		870,605	879,877	- 1.05
Under 16		69,864	60,010	+ 16.42
		940,469	939,887	+ 0.06
Average Times Hunted		4.382	4.090	+ 7.14
Average Seasonal Bag**				
Over 15	Ducks	5.309	5.241	+ 1.30
	Geese	.296	.202	+ 46.53
	Coot	.396	.404	- 1.98
Under 16	Ducks	2.795	2.472	+ 13.07
	Geese	.123	.077	+ 59.74
	Coot	.471	.585	- 19.49
Average Seasonal Number not Retrieved**				
Over 15	Ducks	1.209	1.163	+ 3.95
	Geese	.040	.055	- 27.27
	Coot	.108	.101	+ 6.93
Under 16	Ducks	.782	.810	- 3.46
	Geese	.030	.021	+ 4.29
	Coot	.061	.146	- 58.22
Average Daily Bag**				
Over 15	Ducks	1.21	1.28	- 5.5
	Geese	.07	.05	+ 40.0
	Coot	.09	.10	- 10.0
Under 16	Ducks	.64	.60	+ 6.7
	Geese	.03	.02	+ 33.3
	Coot	.11	.14	- 21.4

* Individuals who purchased a Duck Stamp with intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Mississippi Flyway

For the fifth year in a row, water levels were low in the southern part of the Mississippi Flyway at the time the January waterfowl survey was made. When water is low the bulk of the birds tend to concentrate on rivers and reservoirs where they are easily seen. During some years prior to 1953, the bottoms along the lower Mississippi River and tributaries have been flooded. When this occurs some species of ducks, particularly mallards, are attracted into the bottoms to feed. Suitable techniques for censusing birds when they are in the bottoms have not been developed. Variations in conditions, therefore, have effected the survey results during the period 1950 through 1957, although during the past five years water levels have been such that the data are reasonably comparable.

It is of interest to note that again this year, more mallards wintered in the northern half of the flyway than in the southern.

Percent Change in Mississippi Flyway (Continental) Population Index Figures for Ducks, Geese, and Coot from January 1956 to January 1957.

(Comparable Coverage)

Area	Ducks	Geese	Coot	Total
Ontario	+ 7	+ 3	-	+ 7
Mississippi Flyway States	+ 4	- 4	+ 37	+ 4
Total	+ 4	- 4	+ 37	+ 4

Species Composition - Mississippi Flyway (Continental) - 1956 and 1957

(Comparable Coverage)

Species	Percent of Birds Identified 1956	1957	Percent Change
Mallard	63.8	62.6	+ 1.7
Green-winged Teal	6.1	4.3	- 27.6
Pintail	5.6	6.7	+ 23.1
Blue Goose	5.1	4.4	- 10.2
Canada Goose	3.8	3.9	+ 7.1
Black Duck	2.7	2.8	+ 5.4
Gadwall	2.2	2.5	+ 16.1
Scaup	2.0	3.3	+ 69.8
Coot	1.7	2.2	+ 37.2
Goldeneye	1.0	.6	- 52.1
Canvasback	.9	1.6	+ 82.1
Ringneck	.9	1.1	+ 33.6
Baldpate	.8	.8	+ 12.5
Shoveler	.7	.7	+ 9.3
Merganser	.6	.4	- 32.3
Ruddy Duck	.5	.8	+ 76.6
Snow Goose	.5	.4	- 12.6
Wood Duck	.4	.3	- 10.1
Old Squaw	.3	.1	- 66.3
Redhead	.2	.4	+121.6
White-fronted Goose	.1	Tr.	- 56.1
Bufflehead	.1	Tr.	-
Blue-winged Teal	Tr.	.1	-
Whistling Swan	Tr.	Tr.	-
Scoter and Eider	Tr.	Tr.	-
Total	100.0	100.0	+ 4.0

Summary of Mississippi Flyway Winter Survey Data

In view of the likelihood that the winter survey data are reasonably comparable between 1956 and 1956, it would appear that there has been little change in the over-all waterfowl population in the past year.

Waterfowl - The 1957 waterfowl index is 35 percent above the average of the past eight years and compared to individual years is:

4 percent above 1956
38 percent above 1955
35 percent above 1954
41 percent above 1953
72 percent above 1952
30 percent above 1951
132 percent above 1950

Ducks - The 1957 index for ducks is 40 percent above the average of the past eight years and compared to individual years is:

4 percent above 1956
42 percent above 1955
40 percent above 1954
44 percent above 1953
91 percent above 1952
34 percent above 1951
166 percent above 1950

Among the ducks there were increases in pintails, scaup, and canvasback. Mallards remained about the same, as did most of the other species.

Geese - The 1957 index for geese is nine percent above the average of the past eight years and compared to individual years is:

4 percent below 1956
8 percent above 1955
6 percent below 1954
11 percent above 1953
32 percent above 1952
18 percent above 1951
23 percent above 1950

It is not likely that the change in population of any species of geese in the flyway was sufficiently large between 1956 and 1957 to be significant.

Coot - The 1957 index for coot is three percent below the average of the past eight years and compared to individual years is:

37 percent above 1956
42 percent above 1955
53 percent above 1954
87 percent above 1953
54 percent below 1952
25 percent below 1951
11 percent below 1950

NORTHERN SASKATCHEWAN, NORTHERN MANITOBA AND WESTERN ONTARIO

Weather and Water Conditions

With respect to the survey area covered in this report, this spring was probably as average as they come. The season was considerably advanced over last year, which was an abnormally late season. Cloudy weather with rain was predominant during much of the May survey period but no severe blizzards swept through the area.

Breeding Population Indices

On a stratum basis, the following information was computed relative to total ducks (from 1956):

Stratum C Ontario	-	Increase 57.9%
Stratum C Manitoba	-	Increase 72.5%
Stratum D Manitoba	-	Increase 1.5%
Stratum C Sask. South	-	Decrease 6.6%
Stratum C Sask. North	-	Increase 257.7%

Organized by Provinces, the following information was obtained (from 1956):

Ontario (West of 86° Long.)	-	Increase 57.9%
Manitoba	-	Increase 41.7%
Northern Saskatchewan	-	Increase 86.7%

The survey area as a whole showed an increase for ducks of 65 percent over 1956. On the other hand, Canada geese decreased by about the same percentage. However, this year's population was approximately average. The mallard seems to be holding its own in this area and a healthy increase was recorded for scaup. Ringneck ducks were particularly scarce in the survey area this year.

Breeding Population Indices by Stratum - 1957

Species	C-Ont.	C-Man.	D-Man.	C-Sask. South	C-Sask. North	Total
Mallard	37,386	63,370	32,252	45,659	81,461	260,128
Gadwall	-	3,467	-	-	-	3,467
Baldpate	-	4,430	956	1,114	-	6,500
Pintail	-	1,156	6,259	4,773	-	12,188
Green-winged Teal	-	-	-	6,364	-	6,364
Blue-winged Teal	-	-	695	477	-	1,172
Shoveler	-	-	1,130	-	-	1,130
Merganser	76,889	14,639	435	15,114	25,829	132,906
Redhead	-	-	5,738	477	-	6,215
Ringneck	-	1,156	-	-	-	2,156
Canvasback	-	-	2,086	-	-	2,086
Scaup	60,135	97,463	35,730	75,568	176,831	445,727
Goldeneye	-	2,311	-	6,364	-	8,675
Ruddy Duck	-	-	-	-	-	-
Bufflehead	-	1,156	695	3,182	-	5,033
Scoter	1,940	3,464	956	-	47,022	53,382
Total Ducks	176,350	192,612	86,932	159,092	331,143	946,129
Canada Geese	-	3,992	-	-	1,028	5,020

Total Duck Index - Entire Survey Area - 1955 - 1957

Species	Species Index 1955	1956	1957	3-Year Average	Percent Change From 1956	Percent Change From Average
Mallard	245,569	246,296	260,128	250,664	+ 5.6	+ 3.8
Black Duck	6,905	446	-	-	-	-
Gadwall	1,165	-	3,467	1,544	-	+124.5
Baldpate	29,983	7,877	6,500	14,786	- 17.5	- 56.0
Pintail	46,361	17,295	12,188	25,281	- 29.5	- 51.8
G. W. Teal	13,486	6,121	6,364	8,657	+ 4.0	- 26.5
B. W. Teal	4,208	3,273	1,172	2,884	- 64.2	- 59.3

Continued --

Total Duck Index - Entire Survey Area - Continued.

Species	Species Index 1955	1956	1957	3-Year Average	Percent Change From 1956	Percent Change From Average
Shoveler	1,008	-	1,130	713	-	+ 58.4
Merganser	306,732	61,563	132,906	167,034	+116.2	- 20.4
Redhead	10,340	3,938	6,215	6,831	+ 57.8	- 9.0
Ringneck	98,524	7,747	1,156	35,809	- 85.1	- 96.8
Canvasback	21,525	5,952	2,086	9,854	- 64.9	- 78.8
L. Scaup	388.828	187,082	445,727	340,546	+138.2	+ 30.9
Goldeneye	25,913	5,366	8,675	13,318	+ 61.7	- 34.9
Bufflehead	41,363	12,168	5,033	19,521	- 58.6	- 74.2
Scoter	27,327	6,529	53,382	29,079	+717.6	+ 83.6
Total Ducks	1,269,237	571,553	946,129	928,973	+ 65.5	+ 1.8
Canada Geese	7,088	14,025	5,020	8,711	- 64.2	- 42.4

Total Duck Index by Provinces - 1955 - 1957

Province	Index 1955	1956	1957	Average	Percent Change From 1956	Percent Change From Average
Ontario*	230,159	111,677	176,350	172,729	+57.9	+ 2.1
N. Manitoba	380,429	197,291	279,544	285,755	+41.7	+ 2.2
N. Saskatchewan	658,649	262,585	490,235	470,490	+86.7	+ 4.2

* West of 86° Longitude

Production Data

The percentage of lone drakes recorded was approximately the same as in 1956, which may indicate duck nesting was about as retarded as last year in spite of the differences in the phenology of the two seasons.

Lone Drake Index - 1955-1957

Stratum	Lone Drake Index 1955	Lone Drake Index 1956	Lone Drake Index 1957
Ontario	106,379	15,914	45,939
Manitoba D	18,139	15,538	33,418
Manitoba C	42,973	14,239	11,301
Saskatchewan South	49,251	21,678	23,386
Saskatchewan North	69,404	16,938	38,081
Total	288,587	84,307	154,125

Percent Lone Drakes - 1955 = 40.9
1956 = 29.5
1957 = 29.7

Conclusions

In view of the increase in breeding population as compared to 1956, it is estimated that there will be an increase in the fall flight from the survey area as compared to last year.

S O U T H E R N M A N I T O B A

Weather and Water Conditions -

Due to light snow conditions in this area last winter, the water situation was by no means as plentiful as last year. April rains assisted soil moisture and benefited farm operations but had little effect on increasing potholes and water areas. Practically no rain fell from the last week in April until May 20. Numbers of ponds during May decreased 33.7 percent from 1956 and 28.9 percent from the four year average, 1954-57. Pond index in 1957 was 666,200 compared to 1,005,000 last year.

By July the pond index had dropped to 501,400, which is 67 percent less than the 837,500 estimated in 1956.

Although water conditions were not considered to be good, by all appearances they had little effect on broods in most areas. There were some spots where ganging up of broods was noted in larger potholes or where shallower areas dried up. By and large, broods were still well scattered at the time the inventory was conducted. It appeared that sufficient water would be present to carry the broods through to the flying stage.

Table 1 - May Water Area Indices - Southern Manitoba - Aerial Survey

Year	Ponds in Stratum "A"	Ponds in Stratum "B"	Total Ponds in Strata "A" & "B"
1951	240,500	185,900	426,400
1952	174,200	155,400	329,600
1953	186,600	311,700	498,300
1954	258,200	1,075,400	1,333,600
1955	314,700	427,700	742,400
1956	390,700	614,800	1,005,500
1957	262,200	404,000	666,200
Average 1951-57	261,000	453,600	714,600

Breeding Population Indices -

The breeding population index for this May showed practically no change for the over-all picture. The index for total birds this year was 6.2 percent under 1956, for all practical purposes no change. It showed a slight increase, plus 11.3 percent,

over the average of the past four years. Stratum "A"'s duck total index was the same as last year, while Stratum "B" showed a decline of 11.9 percent. Note Tables 2 and 3 for details.

Of particular interest was the noted decline in divers while generally the surface ducks held their own. Except for pintails, the comparison to last year showed surface ducks with an increase or no change. Of the more numerous species of divers, showing a loss of 20 percent or more from last year, were scaup, canvasback, redheads, and ringnecks. Pintails were down 33.8 percent from last year and down 10 percent from the four-year average. Mallards indicated no change from last year and a 25.1 percent increase over the four-year average. Blue-wing teal were up from last year by 17.9 percent, remembering 1956 was a late year and no doubt many blue wings had not arrived in the area in the early portions of the survey. Blue wings showed a decrease from the four-year average by 7.3 percent.

Coots were definitely down by a considerable amount. Their index last year was 40,000 compared to 20,800 for 1957, a decline of 48 percent. They were also down 19.1 percent from the four-year average.

Table 2 - Species Indices By Stratum, Waterfowl Populations of Southern Manitoba, May 1957

Species	Stratum "A"	Stratum "B"	Total
Pintail	46,500	52,800	99,300
Mallard	224,600	275,400	500,000
Baldpate	16,800	7,900	24,700
Shoveler	18,900	19,400	38,300
Gadwall	4,200	1,300	5,500
B.W. Teal	35,400	27,300	62,700
G.W. Teal	2,100	1,300	3,400
Surface Ducks	348,500	385,400	733,900
Scaup	28,500	31,700	60,200
Canvasback	24,800	6,600	31,400
Redhead	9,000	7,900	16,900
Ringneck	2,900	900	3,800
Ruddy	4,300	2,700	7,000
Goldeneye	1,900	3,500	5,400
Bufflehead	400	-	400
Scoter	-	1,300	1,300

Cont'd.

Table 2 - Species Indices by Stratum, Waterfowl Populations of Southern Manitoba, May 1957 - Continued

Species	Stratum "A"	Stratum "B"	Total
Diving Ducks	71,800	54,600	126,400
Total Ducks	420,300	440,000	860,300
Coots	15,400	5,400	20,800
Ponds	262,200	404,000	666,200

Table 3 - Comparative Indices by Species of the May Waterfowl Population - Southern Manitoba - 1957

Species	Average 1954-57	1956	1957	Percent Change 1956-57	Percent Change Average to 1957
Pintail	110,300	150,000	99,300	-33.8	-10.0
Mallard	399,800	491,000	500,000	+ 1.8	+25.1
Baldpate	24,100	26,700	24,700	- 7.5	+ 2.5
Shoveler	27,500	27,800	38,300	+37.8	+39.3
Gadwall	6,700	5,000	5,500	+10.0	-17.9
B.W. Teal	67,600	53,200	62,700	+17.9	- 7.3
G.W. Teal	4,200	1,700	3,400	+100.0	-19.1
Black Duck	300	1,000	-	-	-
Surface Ducks	640,500	756,400	733,900	- 3.0	+14.6
Scaup	58,300	78,800	60,200	-23.6	+ 3.3
Canvasback	32,300	39,200	31,400	-20.0	- 2.8
Redhead	20,200	20,900	16,900	-19.1	-16.3
Ringneck	4,100	7,000	3,800	-45.7	- 7.3
Ruddy	7,600	6,700	7,000	+ 4.5	- 7.9
Goldeneye	5,100	4,500	5,400	+20.0	+ 5.9
Bufflehead	4,000	1,900	400	-79.0	-90.0
Scoter	800	1,400	1,300	- 7.1	+62.5
Merganser	100	-	-	-	-
Diving Ducks	132,500	160,400	126,400	-21.2	- 4.6
Grand Total Ducks	773,000	916,800	860,300	- 6.2	+11.3
Coots	25,700	40,000	20,800	-48.0	-19.1
Ponds	936,900	1,005,500	666,200	-33.7	-28.9

Table 4 - Progress of Nesting Season (Percent of Lone Males Determined from Pintails, Mallards, Canvasback in Southern Manitoba), May 1957

Year	Stratum "A"	Stratum "B"	Total Stratum "A"&"B"
1956	73.7%	83.6%	79.4%
1957	86.5%	91.5%	89.2%

Production Indices -

The 1957 duck brood index was 142.6 percent above last year. We would expect certain increases in the brood index due to the early nesting season. However, the increases were too large to credit to the time factor of early hatching broods alone. Along with this we then could expect a reduction in the late nesting index. This also occurred to the extent of a reduction by 44 percent in our late nesting index from last year.

Class II and III broods this year averaged 5.6 ducklings per brood compared to 5.1 ducklings per brood a year ago. This also points toward a better production season.

In the May survey coots were off 48 percent from last year. The coot brood index jumped to an almost impossible figure of plus 912.5 percent over last year. Difficulty was experienced last year in seeing the coot broods and yet we knew they were there from ground observations. This year apparently we saw them readily and thus the figures may be misleading. Our best appraisal of the situation is that the coot production was sizeable and there should be an excellent flight of coots from this area.

Comparison of Aerial Brood and Late Nesting Indices in Southern Manitoba 1956 and 1957

		1956	1957	Percent Change
Duck Broods	Not Speciated	24,900	60,400	+142.6%
	Species			
Late Nesting Species	Pintail	2,700	3,000	
	Mallard	18,600	13,900	
	Baldpate	1,500	200	
	Shoveler	1,500	300	
	Gadwall	900	900	
	B.W. Teal	7,100	3,100	
	G.W. Teal	2,200	100	
Subtotal - Puddlers		34,500	21,500	- 37.7%
	Scaup	2,200	700	
	Canvasback	600	-	
	Redhead	3,000	200	
	Ringneck	300	100	
	Ruddy	6,200	3,000	
	Goldeneye	-	700	
Subtotal - Divers		12,300	4,700	- 61.8%
Grand Total		46,800	26,200	- 44.0%
Coot Broods		1,600	16,200	+912.5%

Aerial Brood and Late Nesting Indices - Southern Manitoba, July 1957

		Stratum A	Stratum B	Provincial Totals
Duck Broods	Not Speciated	37,700	22,700	60,400
Late Nesting Indices	Species			
	Pintail	200	2,800	3,000
	Mallard	10,200	3,700	13,900
	Baldpate	200	-	200
	Shoveler	300	-	300
	Gadwall	900	-	900
	B.W. Teal	3,100	-	3,100
	G.W. Teal	100	-	100
Subtotal Puddlers		15,000	6,500	21,500
	Scaup	700	-	700
	Canvasback	-	-	-
	Redhead	200	-	200
	Ringneck	100	-	100
	Ruddy	1,200	1,800	3,000
	Goldeneye	700	-	700
Subtotal Divers		2,900	1,800	4,700
Grand Total		17,900	8,300	26,200
Coot Broods		9,700	6,500	16,200
Pond Index		241,700	259,700	501,400

Conclusions-

The fall flight from Southern Manitoba is predicted to be a sizeable increase as compared to 1956 in all species except red-heads and ring-necks, which will remain about the same.

MINNESOTA

Weather and Water Conditions

A shortage of water and near drought conditions prevailed in many areas until after the middle of May when heavy rains brought a reverse condition.

The pond index during May as measured on the aerial transects was 106,970. During July, these same transects yielded a total of 339,892.

Breeding Population Indices

Table 1 contains the data of the aerial breeding pair census which was flown from May 14 to May 23. These data indicate a 20.5 percent decrease from 1956 and a 5.9 percent decrease from the average of four previous years.

Ground transects totalling 1,076 miles were run in both 1956 and 1957 during the same period as the aerial transects. These data shown on Table 2 show a decline of 27 percent in the number of pairs. Blue-winged teal were down 40 percent and mallards were down 31 percent.

Based upon the preceding data, it is concluded that Minnesota had a decline of at least 20 percent from 1956 in the number of breeding ducks.

Table 1 - Waterfowl Breeding Ground Surveys - Aerial Transect Data

Transect No.	Total Ducks Seen*					
	1951	1952	1953	1955	1956	1957
1	48	23	-	22	154	85
2	13	12	-	21	27	5
3	29	14	3	6	54	12
4	266	85	-	246	135	191
5	32	16	23	10	97	52
6	41	22	-	9	34	21

Continued --

Table 1 - Waterfowl Breeding Ground Surveys - Aerial Transect Data - Continued.

Transect No.	Total Ducks Seen*					
	1951	1952	1953	1955	1956	1957
7	9	7	-	12	9	19
8	18	26	-	35	111	27
9	70	34	40	42	56	71
10	26	28	-	39	56	87
11	51	51	41	13	51	50
12	67	59	-	21	60	63
13	36	46	58	26	68	24
14	20	42	-	71	72	32
15	24	57	49	34	13	36
16	14	26	-	32	23	26
17	46	60	-	65	195	61
18	87	229	-	34	130	53
19	83	164	158	64	132	100
20	159	215	-	65	104	105
21	299	219	413	90	128	243
22	78	268	-	106	102	78
23	176	194	217	87	121	76
24	111	135	-	111	154	104
25	116	108	138	44	121	56
26	126	115	-	92	179	80
27	174	171	318	87	54	84
28	70	74	-	94	117	55
29	60	57	68	23	27	31
30	83	54	86	80	89	201
31	116	58	66	36	89	32
32	68	113	167	15	237	273
Total	2,616	2,782	-	1,732	2,999	2,383
Lesser Scaup	169	59	446	102	453	118
Grand Total	2,775	2,841	-	1,834	3,452	2,501

* Lesser scaup are listed only as a total figure.

Table 2 - Summary of Ground Transect Data

	1956	1957	Change
Total Miles	1076	1076	-
Total Water Areas	1577	1201	-
Number Occupied	261	213	-
Percent Occupied	16.6	17.7	-
Species (Number of Pairs)			
Blue-winged Teal	314	188	- 40%
Mallard	194	135	- 31%
Ringneck	83	96	+ 16%
Pintail	27	31	+ 15%
Redhead	26	10	-
Shoveler	19	16	-
Baldpate	37	16	-
Other	39	49	-
Total	739	541	- 27%

Production Data

Specific brood counts on comparable areas were not made this year, however, other field studies enabled some evaluation of the situation. On July 3 and 4, a trip was made into counties such as Lac Qui Parle and Kandiyohi which were hard-hit by floods during the third week of June. No Class I broods were seen which would have hatched since the flooding. A similar trip was made on the same day in Ottertail County outside of the flood zone and numerous Class I broods were sighted.

It is concluded that flooding harmed the first nesting attempt in several parts of the State. A good hatch of divers came off in northwestern counties, but this is a very limited area of the State. In general, at this time (July 29) it appears that production per breeding pair will be somewhat below normal. The situation could change if a good late hatch comes off.

It is of interest to note that an intensive study on the Chippewa National Forest also revealed a small decrease in production.

Conclusions

On the basis of a decrease in the size of the breeding population and evidence that production is below normal, it is estimated that the fall flight from Minnesota will be smaller than in 1956.

MICHIGAN

Breeding Population Indices

Surveys were made to appraise waterfowl production throughout the State by using conventional float-trip census methods on selected aquatic sites. Sample check areas on each of the 16 districts are covered to obtain a comparative index of change for breeding pairs and numbers of broods. Coverage has remained essentially the same for the past nine years.

The potential breeding population compared to the previous years were as follows:

Year	Lineal Miles Censused	Potential Breeders Per Lineal Miles
1949	85	6.80
1950	81	7.91
1951	120	8.18
1952	82	7.13
1953	95.5	12.75
1954	93.5	12.31
1955	111.2	11.00
1956	110.5	11.48
1957	135.4	9.30

Comparisons show the potential breeding population were down slightly from that of the last four years but close to the past eight-year average.

The species composition of the potential breeding population as determined on these sample check areas follows:

Mallard	27.7 percent
Black Duck	23.7 percent
Blue-winged Teal	19.8 percent
Wood Duck	4.9 percent
Ring-necked Duck	7.0 percent
Mergansers	0.3 percent
Pintail	0.5 percent
Goldeneye	0.5 percent
Unidentified	9.7 percent

Breeding population changes for wood duck were determined by float-trip censuses and by percent occupancy of nest boxes. The data collected are as follows:

Wood Duck Breeding Pair Surveys (Float-Trips)

Year	Lineal Miles Censused	Potential Breeders Per Lineal Mile
1950	81	.17
1951	120	.32
1952	82	.21
1953	95.5	.85
1954	93.5	.58
1955	111.2	.70
1956	110.5	.28
1957	135.4	.46

The percentage of occupied wood duck nest boxes in the past nine years follows:

Swan Creek Wildlife Experiment Station - Allegan County

Year	Boxes Examined	Occupied by Wood Ducks	Percent of Nest Boxes Used
1949	40	9	22.5
1950	35	10	28.6
1951	33	11	33.3
1952	32	4	12.5
1953	26	9	34.6
1954	24	8	33.3
1955	20*	5	25.0
1956	41*	5	12.2
1957	40*	7	17.5

* Metal predator-proof boxes used.

In 1956 and 1957, nest boxes were examined also on the Rose Lake, Grass Lake, and Seney Refuge areas. The results of these examinations are as follows:

Year	Boxes Examined	Occupied by Wood Ducks	Percent of Nest Boxes Used
1956	37	10	27%
1957	49	13	26%

From this information we can see very little change in the number of wood ducks in Michigan

Population Indices

The brood survey comparisons follow:

Year	Broods Per Lineal Mi.	Hens and Young Per Lineal Mi.	Bachelor Ducks Per Lineal Mile	Average Size of Broods Observed
1949	.47	2.75	6.50	6.00
1950	.34	2.32	5.50	5.87
1951	.35	2.20	3.31	5.76
1952	.70	3.92	3.21	4.60
1953	.51	3.63	4.32	6.10
1954	.20	1.67	4.60	6.24
1955	.64	4.65	5.09	6.28
1956	.53	3.67	4.40	5.86
1957	.38	2.30	4.80	5.10

Broods were fewer compared to the past few years but similar to the past eight-year average. The number of young per brood was next to the lowest in the eight-year average and bachelor birds remained equal to the average for the years recorded.

Conclusions

Waterfowl production in Michigan for 1957 was comparable to the past eight-year average but slightly below that of last year.

It seems likely that there has been little change in the number of wood duck in the State.

OHIO

Weather and Water Conditions

This was an exceptionally wet spring with intermittent flooding common on most streams throughout the State. Inland lakes, ponds and streams carried a higher level of water than any spring during the past five years. Flooding was common even during the first two weeks of July when water level normally begin to recede rather rapidly.

These high waters seemingly resulted in some loss of nests and eggs of the ground-nesting species. Some wood duck nest boxes were also inundated.

The high water also restricted time of conducting surveys as well as the ability to actually see broods. It is believed that the number of broods recorded during 1957, particularly on the streams, is considerably below the actual number present.

Breeding Population Indices

The following tables present the data collected during the 1957 breeding population surveys and the wood duck nest box checks:

Waterfowl Breeding Pair Survey - Magee Marsh (2,000 Acres)

Species	Pairs		Prs. Per Sq. Mi.		Percent Change
	1956	1957	1956	1957	
Mallard	43	33	13.9	10.7	-23
Black Duck	8	9	2.6	2.9	+13
Blue-winged Teal	11	8	3.6	2.6	-27
Wood Duck	11	16	3.6	5.2	+46
Total	73	66	23.7	21.4	-10

Aerial Breeding Pair Survey - Lake Erie Marshes (80 Linear Miles)

Species	Pairs		Prs. Per Sq. Mi.		Percent Change
	1956	1957	1956	1957	
Mallard	96	85	9.6	8.5	-12
Black Duck	82	79	8.2	7.9	- 4
Blue-winged Teal	12	8	1.2	.8	-33
Wood Duck	5	7	.5	.7	+40
Total	195	179	19.5	17.9	- 8

Waterfowl Breeding Pair Survey - Streams (160 Linear Miles)

Species	Pairs		Prs./Linear Mile		Percent
	1956	1957	1956	1957	Change
Mallard	26	16	.16	.10	-38
Black Duck	3	3	.02	.02	Same
Blue-winged Teal	1	1	.01	.01	Same
Wood Duck	114	121	.71	.76	+ 7
Total	144	141	.90	.89	- 2

Wood Duck Nest Box Checks (State-wide)

Area of Inspection	No. Boxes Checked		No. Boxes Usable		No. Boxes Used		Percent of Utilization	
	1956	1957	1956	1957	1956	1957	1956	1957
District #2	258	216	258	210	63	41	24.42	19.52
District #3	134	115	125	104	28	19	22.40	18.27
District #4	308	305	261	248	20	20	7.66	8.06
District #5	288	263	246	228	32	39	13.01	17.11
District #6	179	213	160	120	31	36	19.38	30.00
Magee Marsh	185	116	185	116	11	21	6.00	18.10
Delaware Dam	87	80	87	77	16	23	18.40	29.87
Woodbury Area	19	19	19	19	17	16	89.47	84.21
Total	1458	1327	1341	1122	218	215	16.26	19.16

Production Indices

The following tables present the data collected during the 1957 production surveys:

Waterfowl Brood Survey - Magee Marsh (2,000 Acres)

Species	No. of Broods 1956	1957	Broods Per Square Mile 1956	1957	Percent Change	Young Per Brood 1956	1957	Percent Change
Mallard	10	10	3.27	3.27	Same	6.4	6.3	-1.56
Black Duck	5	6	1.63	2.00	+ 20	6.2	5.7	-8.06
Blue-winged Teal	4	6	1.31	2.00	+ 50	5.0	5.0	Same
Wood Duck	3	10	.98	3.27	+233	9.2	9.1	-1.09
Total	22	32	7.19	10.54	+ 46	6.7	6.5	-3.00

Waterfowl Brood Survey - Streams (160 Linear Miles)

Species	No. of Broods 1956	1957	Broods Per Linear Mile 1956	1957	Percent Change	Young Per Brood 1956	1957	Percent Change
Wood Duck	60	55	.375	.344	- 8.3	7.3	7.6	+4.1
Mallard	4	0	.025	-	-	7.0	-	
Black Duck	1	0	.006	-	-	7.0	-	
Total	65	55	.406	.344	-15.3	7.1	7.6	+7.0

Waterfowl Brood Survey - Delaware Reservoir (42-1/2 Acre Ponds)

Species	No. of Broods 1956	1957	Broods/Acre of Water 1956	1957	Percent Change
Wood Duck	22	10	1.05	.48	- 55
Mallard	10	4	.48	.19	- 60
Blue-winged Teal	15	7	.71	.33	- 53
Black Duck	3	0	.14	-	-
Total	50	21	2.38	1.00	- 58

Conclusions

State-wide it appears that the production of mallards, black ducks, and blue-winged teals is about the same as last year while wood ducks have increased slightly.

INDIANA

Weather and Water Conditions

Temperatures in May and June were near normal. Precipitation was below normal during February and March, and considerably above normal in April, May and June.

From April 5 through July 15, most streams in the State were at flood several times. This condition was most prevelent in the central and western parts, and least notable in the northeast.

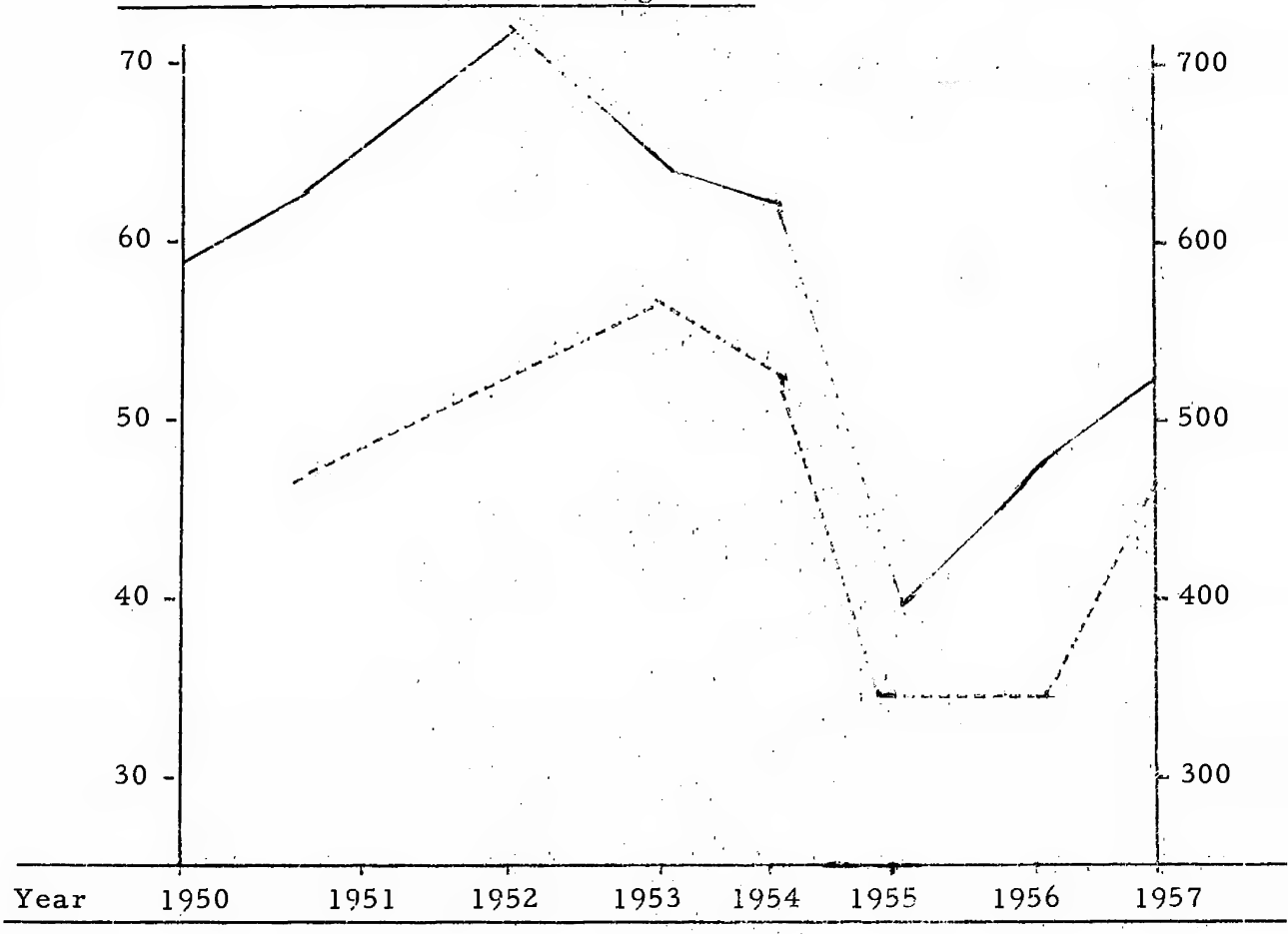
Breeding Population Data

Three stream transects totalling 47 miles have been covered during the first 15 days of May in 1952, 1953, 1955, 1956, and 1957. Forty-five males and 17 female wood ducks were observed this year. Observed males were two percent below the figure for 1956, and 25 percent below the previous four-year average. Observed females were 13 percent above those of 1956, and 32 percent below the four-year average. One brood of wood duck was observed on the preliminary survey this year, compared to two broods in 1956 and two broods in 1955.

Production Data

Nine stream transects totalling 143 miles have been censused, by boat, between the last week of May and the third week of June, since 1950. A total of 75 broods was observed this year. This count is 13.6 percent above the number of wood duck broods observed in 1956, but 7.4 percent below the previous (1952-56) five-year average. Twenty of the 75 broods were in age Class I, 48 in age Class II, and seven in age Class III. Whole counts on brood size were obtained for 47 of the 75 broods. Average brood size for the 47 broods was 8.9, and ranged from a minimum of three to a maximum of 16.

Wood Duck Broods and Young Per 100 Miles of Comparable Stream Transects - Indiana, 1950 through 1957



Year	1950	1951	1952	1953	1954	1955	1956	1957
Brds./ 100 Mi.	59.2	64.2	72.3	63.6	62.6	39.2	46.2	52.5
Ave. Brd. Size *	-	7.1	7.1	8.8	8.3	8.6	7.3	8.9
Yng./ 100 Mi.	-	456	513	560	516	337	337	467

* Average brood size determined from whole counts only.

———————— Broods per 100 miles of transect.

- - - - - - - - - - - - - - - Young per 100 miles of transect.

Up to the present time, 60 wood type and 24 metal type nesting boxes have been inspected for evidence of successful clutches. This year, six successful clutches were found, compared to eight in the same 84 boxes in 1956. Percent usage in 1957 is 7.1 percent, compared to 9.5 percent in 1956.

A limited aerial brood survey of approximately 50 square miles of pothole and river marsh habitat was conducted again, this year on June 27. Six broods were observed--three mallard, one black duck, and two blue-winged teal, compared to nine in 1956, five in 1955, and 28 in 1953.

Conclusions

It is estimated that the production of wood duck in Indiana will be somewhat greater than it was in 1956, although it will still be below the average of the past five years.

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1955-56 and 1956-57 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1956-57	1955-56	Percent Change 1955-56 to 1956-57
Black	344,725	407,264	- 15.36
Mallard	279,810	305,633	- 8.45
Canvasback	98,604	82,807	+ 19.08
Wood Duck	83,073	103,303	- 19.29
Scaup	75,906	125,659	- 39.59
Green-winged Teal	67,177	62,713	+ 7.12
Blue-winged Teal	52,091	48,181	+ 8.12
American Widgeon	48,453	58,313	- 16.91
Pintail	43,833	55,618	- 21.19
Goldeneye	40,142	49,870	- 19.51
Redhead	39,873	63,983	- 37.68
Merganser	38,404	62,000	- 38.06
Ringneck	34,902	40,358	- 13.52
Scoter	32,100	10,178	+215.39
Ruddy Duck	26,119	22,092	+ 18.23
Bufflehead	23,641	28,274	- 16.39
Shoveler	6,830	10,148	- 32.70
Gadwall	6,425	8,133	- 21.00
Others	4,944	4,710	+ 4.97
Tot. Retrieved Ducks	1,347,052	1,549,237	- 13.05
Tot. Ducks Retrieved	411,277	367,017	+ 12.06
Total Duck Kill	1,758,329	1,916,254	- 8.24
Canada Goose	58,898	66,320	- 11.19
Brant	6,251	9,055	- 30.97
Other Geese	955	1,266	- 24.57
Tot. Retrieved Geese	66,104	76,641	- 13.45
Tot. Geese not Retrieved	12,793	18,071	- 29.21
Total Goose Kill	78,897	94,712	- 16.70
Total Retrieved Coot	105,694	114,500	- 7.69
Total Coot not Retrieved	24,687	40,039	- 38.34
Total Coot Kill	130,381	154,539	- 15.63

Atlantic Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1956-57	1955-56	Percent Change 1955-56 to 1956-57
Number of Potential Hunters				
Over 15*		377,689	381,704	- 1.05
Under 16		23,746	19,107	+ 24.28
		401,435	400,811	+ 0.16
Number of Active Hunters**				
Over 15		308,957	320,727	- 3.67
Under 16		17,556	14,119	+ 24.34
		326,513	334,846	- 2.49
Average Times Hunted**		4.272	4.226	+ 1.09
Average Seasonal Bag**				
Over 15	Ducks	4.240	4.695	- 9.69
	Geese	.209	.235	- 11.06
	Coot	.307	.336	- 8.63
Under 16	Ducks	2.108	3.080	- 31.56
	Geese	.091	.097	- 6.19
	Coot	.622	.482	+ 29.05
Average Seasonal Number Not Retrieved**				
Over 15	Ducks	1.290	1.101	+ 17.17
	Geese	.040	.055	- 27.27
	Coot	.065	.118	- 44.91
Under 16	Ducks	.730	.986	- 25.96
	Geese	.029	.026	- 11.54
	Coot	.255	.153	+ 66.67
Average Daily Bag**				
Over 15	Ducks	.99	1.11	- 10.80
	Geese	.05	.06	- 16.70
	Coot	.07	.08	- 12.50
Under 16	Ducks	.49	.73	- 32.90
	Geese	.02	.02	N. C.
	Coot	.15	.11	+ 36.40

* Individuals who purchased a Duck Stamp with intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Atlantic Flyway

Weather conditions during the survey period in 1957 were generally favorable and it is believed that the data are reasonably comparable to previous years.

Percent Change in Atlantic Flyway (Continental) Population Index Figures for Ducks, Geese, Brant, Swan, and Coot from January 1956 to January 1957 (Comparable Coverage).

Area	Ducks	Geese	Brant	Swan	Coot	Total
Canada *	-58	-13				-56
Atlantic Flyway States	-21	-27	-1	+4	-20	-21
Total	-22	-27	-1	+4	-20	-22

* Newfoundland, Quebec and the Maritimes

Species Composition - Atlantic Flyway (Continental) 1956 and 1957.

(Comparable Coverage)

Species	Percent of Birds Identified 1956	1957	Percent Change
Scaup	17.0	16.2	- 26.6
Coot	15.7	16.3	- 20.4
Canada Goose	10.6	9.8	- 28.5
Pintail	9.4	5.8	- 52.6
Black Duck	9.2	11.6	- 3.3
Mallard	7.7	9.7	- 2.8
Canvasback	4.7	4.8	- 21.8
Scoter and Eider	3.5	2.4	- 47.8
American Brant	3.4	4.3	- 1.2
Ringneck	3.3	2.6	- 39.8
Redhead	3.3	2.4	- 42.6
Baldpate	3.1	2.8	- 30.4

Continued ---

Species Composition - Atlantic Flyway - Continued.

Species	Percent of Birds Identified 1956	1957	Percent Change
Goldeneye	2.0	2.3	- 8.2
Ruddy Duck	1.0	1.6	+ 23.4
Green-winged Teal	1.0	1.0	- 17.1
Merganser	.8	1.1	+ 5.1
Whistling Swan	.8	1.1	+ 3.9
Gadwall	.8	.8	- 25.2
Snow Goose	.7	.9	N. C.
Bufflehead	.5	.6	- 9.3
Shoveler	.5	.7	+ 7.6
Blue-winged Teal	.4	.2	- 47.9
Old Squaw	.3	.5	+ 41.2
Wood Duck	.3	.5	+ 36.3
Blue Goose	Tr.	Tr.	-
White-fronted Goose	Tr.	Tr.	-
Total	100.0	100.0	- 21.5

Summary of Atlantic Survey Winter Survey Data

Waterfowl - The 1957 waterfowl index for the Atlantic Flyway is 19 percent below the average of the past eight years and compared to individual years is:

22 percent below 1956
30 percent below 1955
19 percent below 1954
41 percent below 1953
17 percent below 1952
8 percent below 1951
4 percent above 1950

Continued --

Ducks - The 1957 duck index is 24 percent below the average of the past eight years and compared to individual years is:

22 percent below 1956
36 percent below 1955
30 percent below 1954
41 percent below 1953
28 percent below 1952
16 percent below 1951
1 percent above 1950

Among the ducks there was little or no change in the population of mallards, blacks, and goldeneye. There were significant decreases in scaup, pintail, canvasback, redhead, baldpate, and ringneck. No important species increased significantly.

Geese - The 1957 index for geese is eight percent below the average of the past eight years and compared to individual years is:

27 percent below 1956
29 percent below 1955
2 percent above 1954
27 percent below 1953
17 percent above 1952
20 percent above 1951
16 percent above 1950

The decrease was entirely among the Canadas, since the population of greater snow geese remained unchanged.

Brant - The 1957 index for American brant is eight percent above the average of the past eight years, and compared to individual years is:

1 percent below 1956
12 percent below 1955
34 percent below 1954
4 percent above 1953
55 percent above 1952
43 percent above 1951
110 percent above 1950

Swan - The 1957 index for whistling swan is 15 percent below the average of the past eight years and compared to individual years is:

4 percent above 1956
55 percent below 1955
25 percent below 1954
28 percent below 1953
11 percent above 1952
18 percent above 1951
31 percent above 1950

Coot - The 1957 coot index is seven percent below the average of the past eight years and compared to individual years is:

20 percent below 1956
5 percent above 1955
90 percent above 1954
54 percent below 1953
24 percent above 1952
16 percent above 1951
3 percent below 1950

MARITIME PROVINCES

Weather and Water Conditions

With the exception of Prince Edward Island, the weather conditions, so far this season, have been favorable for nesting and rearing waterfowl. Prince Edward Island had an unusually heavy snowfall on May 2nd and 3rd (10 inches was recorded at Charlottetown). Night temperatures on the Island during May were below normal. Snow patches were still present along the shorelines of some ponds and lakes on Prince Edward Island as late as May 28th.

Total precipitation for the months of March, April, May and June was normal for New Brunswick and below normal for Nova Scotia and Prince Edward Island (May was an extremely dry month in Nova Scotia). The May 31st water level of the St. John River at Fredericton, New Brunswick was 7 and 10 feet lower, respectively, than the 1956 and 1957 levels.

Breeding Population Data

The spring migration of many of the waterfowl species was still underway during the aerial spring survey of Prince Edward Island (Table 1). This was apparently caused by the heavy snowstorn in early May which blocked northward migration for at least a week. Waterfowl arriving from the south piled up along the east coast of New Brunswick, the north coast of Nova Scotia, and in Prince Edward Island. Because of this pause in the migration, the results of the 1957 spring survey of Prince Edward Island are not suitable for comparison with that of 1956. A comparison of the counts obtained on the 1956 and 1957 aerial surveys of Nova Scotia and New Brunswick indicate that no appreciable change in the breeding populations of black duck, pintail, green-winged teal and blue-winged teal have occurred and that there is a decrease in the numbers of goldeneye and ringnecked duck.

Table 1 - Spring Waterfowl Inventory (Aerial) - Maritime Provinces, 1956 and 1957

Area	Year	Species						
		Black Duck	Pintail	G.W. Teal	B.W. Teal	Ring-neck Duck	Golden-eye	Scaup
N.B. - N.S. Border Area	1956	17/12	8/2	7/1	6/1	6/0	1/0	-
		66	18	0	4	18	5	-
	1957	61/49	7/5	7/0	1/1	1/0	5/0	-
		136	45	147	50	50	10	-
Nova Scotia	1956	33/82	4/0	7/0	-	-	0/1	-
		724	40	0	-	-	5	-
	1957	44/43	-	-	1/0	-	1/0	-
		453	-	-	35	-	0	-
New Brunswick (St. John River)	1956	33/35	-	3/0	3/1	14/1	26/10	-
		193	-	0	0	104	236	-
	1957	41/37	5/0	1/1	3/1	14/0	31/16	-
		279	0	0	4	35	194	-
Transects, N.B. Study Area	1956	52/30	-	3/0	6/0	24/2	39/34	-
		90	-	-	3	69	169	-
	1957	51/34	5/0	-	7/1	18/1	26/12	0/0
		161	0	-	7	44	40	60
Prince Edward Island	1956	219/74	4/0	3/2	2/1	25/0	89/9	0/0
		691	0	20	26	159	523	108
	1957	787/280	-	-	151/50	62/22	1299/394	-
		2887	-	-	784	33	4830	-
Total	1956	2938	94	68	87	494	1357	108
	1957	6770	89	165	1313	348	8642	60

Continued --

Table 1 - Spring Waterfowl Inventory (Aerial) - Maritimes Provinces, 1956 and 1957 - Continued

Area	Year	Species						
		Eiders and Scoters	Mergansers	Unid. and Others	Total Ducks	Total Game Ducks	Canada Geese	Brant
N.B. - N.S. Border Area	1956	-	-	2/1	-	-	-	-
		-	-	0	249	249	98	10
	1957	-	-	-	-	-	-	-
		-	-	-	662	662	425	50
Nova Scotia	1956	0/0	0/1	5/0	-	-	-	-
		50	0	1	1086	1034	92	-
	1957	7/0	-	-	-	-	-	-
		108	-	-	789	667	241	36
New Brunswick (St. John River)	1956	-	6/0	4/0	-	-	-	-
		-	4	0	819	792	-	-
	1957	-	2/1	2/0	-	-	-	-
		-	3	0	825	816	6	-
Transects, N.B. Study Area	1956	-	1/0	10/0	-	-	-	-
		-	0	0	731	725	-	-
	1957	-	-	4/4	-	-	-	-
		-	-	0	638	638	-	-
Prince Edward Island	1956	0/0	186/49	-	-	-	-	-
		320	1583	-	4756	2383	54	1979
	1957	39/15	35/10	75/60	-	-	-	-
		18	190	54	15354	14949	12962	4461
Total	1956	370	2083	45	7643	5190	244	1989
	1957	248	289	344	18268	17731	13634	4547

Production Data

The results obtained this year on the aerial brood counts on Prince Edward Island indicate that there is a decrease in the number of broods produced compared with 1956. The principal reason for this is probably the heavy snow in early May. This may be offset by re-nesting, and the results show later in the breeding season.

At present, with the brood season only half completed, the ground surveys in New Brunswick and Nova Scotia indicate that there is a decrease in the number of broods produced and in the number of adults present in the region. The smaller number of broods may be offset by the larger number of ducklings per brood.

Table 2 - Comparable Aerial Brood Data (Prince Edward Island)

	Black Duck		Ringneck		Goldeneye		Teal		Total Game Ducks	
Year	Ad.	Br.	Ad.	Br.	Ad.	Br.	Ad.	Br.	Ad.	Br.
1955	277	16	5	-	7	-	189	1	483	16
1956	370	36	89	-	45	4	123	15	630	57
1957	267	26	84	2	6	-	83	-	473	30

Table 3 - Comparable Ground Brood Data (New Brunswick and Nova Scotia)

	Black Duck		Ringneck		Goldeneye		Teal		Total Game Ducks	
Year	Ad.	Br.	Ad.	Br.	Ad.	Br.	Ad.	Br.	Ad.	Br.
1956	271	27	59	-	44	8	69	13	448	50
1957	223	21	51	-	49	12	37	4	381	44

Brood averages are appreciably larger than in 1956 and much larger than in 1955. The average number of ducklings per brood this year is 8.2 as compared with 7.2 in 1956 and 6.5 in 1955.

Brood data obtained to July 22 are shown in Table 4.

Table 4 - Average Brood Sizes by Class (1955, 1956 and 1957)

Species	Total Broods	Class I Br.	Class I Ave. Size	Class II Br.	Class II Ave. Size	Class III Br.	Class III Ave. Size
Black Duck							
1957	78	19	8.7	50	7.7	9	8.0
1956	72	25	6.8	43	6.3	4	5.5
1955	60	29	8.0	26	7.0	5	6.6
Goldeneye							
1957	16	8	5.0	7	9.4	1	8.0
1956	14	8	5.6	6	7.0	-	-
1955	31	17	6.4	13	6.0	1	5.0
Blue-winged Teal							
1957	15	9	9.8	5	8.8	1	3.0
1956	13	11	7.6	2	5.0	-	-
1955	4	3	8.7	1	10.0	-	-

Conclusions

It is expected that waterfowl productions in the Maritime Provinces will be slightly lower than in 1956 and approximately the same as in 1955.

MAINE

Weather and Water Conditions

Ice-out dates and general phenological conditions were considerably earlier than those of 1956 and were somewhat ahead of the long-term average. Early season phenology was nearly a month advanced from a year ago; that of the latter part of the breeding season was progressively less advanced. Temperatures were generally above average from March through June; this was particularly noticeable in April and May. Precipitation was below normal throughout the entire period, particularly in southern Maine and the coastal belt. In northern Maine, frequent, but well spaced rainfalls occurred in June and the first-half of July.

Breeding Population Data

Resident waterfowl on the Maine study areas as a whoe were more numerous than a year ago. All species showed slight to moderate increases with the exception of the green-winged teal. The increase in black ducks, although slight, was gratifying in view of three consecutive years of population declines recorded for this species. The apparent increase in the American goldeneye is the first recorded in many years. The bird is still relatively uncommon as a breeder throughout northern, eastern and central Maine.

The complete census data by study areas are present in the following table. In summary, the status of the initial population of the six species of breeding game ducks is as follows:

Waterfowl Census Data (Number of Breeding Pairs)

Study Areas	Black Ducks		Ringneck Ducks		Wood Ducks	
	1956	1957	1956	1957	1956	1957
St. John R., Van Buren Madawaska.	12	14	-	-	3	3
Portage Lake, Portage	4	5	13	9	1	2
Meduxnekeag Stream, Hodgdon	5	6	-	-	1	2
Pocamoonshine-Crawford Lakes	28	35	40	60	3	6
St. Croix R., Calais-Baring	14	13	-	-	2	2
Barn Meadow, Calais	8	7	6	7	-	-

Continued --

Waterfowl Census Data - Continued

Study Areas	Black Ducks 1956	Black Ducks 1957	Ringneck Ducks 1956	Ringneck Ducks 1957	Wood Ducks 1956	Wood Ducks 1957
Magurrewock Stream, Calais	8	6	6	7	-	-
Moosehorn Stream, Baring	5	3	-	-	-	-
Cranberry Lake, Baring	-	-	3	2	1	2
Boyden Lake, Perry	2	3	2	4	1	1
Pennamaquan River, Pembroke	4	2	12	3	-	-
Great Works Marsh, Edmunds	6	8	9	10	2	2
Scammon Pond, Eastbrook	4	5	6	6	3	3
Penobscot River, Lincoln-Enfield	17	19	-	-	6	8
Davis-Holbrook Thorofare, Eddington	5	5	1	5	-	-
Snake Pond, Brooksville	-	-	2	2	-	-
Goose River, Belfast-Swanville	14	14	15	14	2	3
Ruffingham Meadow, Searsmont	-	-	-	-	2	2
Total	136	145 (+7%)	112	126 (+13%)	27	36 (+33%)

Production Data

During the nesting study a total of 39 nests were located. This is the smallest sample in recent years. Less manpower was available for nest hunting this year. Also, because of the re-nesting study being conducted, a smaller portion of those found was utilized for determining natural hatching success.

All nests located were of the black duck and ringnecked duck. At the present time, a few are still being incubated. Based upon the remainder of the sample, nesting success is running approximately the same as that of 1956; this is somewhat below average.

Brood averages to date are running close to those of 1956. Although relatively few had been recorded in the important Class III age up to July 15, it is likely that the final tabulated figures will be very similar to 1956. This will be slightly higher than the long-term average, Satisfactory rearing conditions have been noted on a majority of the marshes this year in spite of a general deficiency of precipitation; most exceptions have occurred in the coastal belt.

Brood data obtained thus far are summarized in the following table.

Average Brood Sizes by Age Classes (Complete Counts Only)

Species	Total Broods	Class I Broods	Class I Ave. Size	Class II Broods	Class II Ave. Size	Class III Broods	Class III Ave. Size
Black Duck	38	16	7.7	10	6.5	12	6.6
Ringneck	22	19	8.1	3	8.0	-	-
American Goldeneye	5	3	9.3	2	6.5	-	-
Wood Duck	4	2	8.5	2	3.5	-	-
Blue-winged Teal	1	-	-	-	-	1	5.0
Total	70	40	8.1	17	6.4	13	6.5

Conclusions

Considering increased breeding stock, lower than average nesting success, but slightly better than usual rearing success, it may be expected that waterfowl production in northern, eastern, and central Maine will be slightly increased from that of 1956.

NORTHEASTERN STATES

Weather and Water Conditions

The current production season can be characterized as a relatively warm, dry period. This is in contrast to the generally high water conditions and seasonally low temperatures which prevailed in 1956.

Precipitation during April and May was below normal over much of the northeast; only New Jersey and Pennsylvania recorded normal rainfall. Temperatures during the period were above average.

June and July precipitation was below normal for all the northeast, local exceptions being portions of northern New York State, Vermont, New Hampshire and Maine. The latter areas received varying amounts of rainfall from local thunderstorms and Hurricane Audrey. Temperatures during this period were above seasonal averages.

The seasonal high tides in the coastal areas were not excessive this year.

Phenologically the production season is advanced over last year. Cooperators state plant growth is advanced two to three weeks in the southern portion of the region and from one to four weeks in the north. The earliest advances were observed near large open waters. This is in marked contrast to the 1956 season which was generally considered two to three weeks later than normal.

Breeding Population Trends

Reports from the Maine study areas (Mendall) and others in the region show a slight increase in the numbers of breeding birds. Early nesting was noted in all portions of the region, however, the peak of the nesting season was considered advanced about one week.

Nest losses from raccoons and crows were reported in excess of the usual losses.

Brood Production Data

Brood rearing conditions were reported from good to excellent with the survival of young birds being above average. The gradual drying up of many small rearing areas may have concentrated broods in some of the study areas. This condition coupled with the earlier nesting should be considered when interpreting the tabulated results of the observations presented in the following tables.

Number of Comparable Areas by States Showing Status of Production

State	Comparable Areas	Increase	No Change	Decrease
Connecticut	46	25	11*	10
Delaware	4	1	0	3
Maine	22	17	0	5
Massachusetts	1	1	0	0
New Jersey	11	10	0	1
New York	7	4	2**	1
Rhode Island	12	7	1	4
Vermont	2	0	0	2
West Virginia	3	3	0	0
Total	108	68	14	26

* Nine areas showed no ducks this year or last year.
** One area showed no ducks this year or last year.

Summer Brood Survey in the Northeastern States, 1957 (98 Comparable Areas)

Species	Total Broods		Young Produced		Average Brood		Percent of Change			
							Yng. Produced		Broods	
	1957	1956	1957	1956	1957	1956	Increase	Decrease	Increase	Decrease
Black Duck	355	296	2295.5	1872.2	6.5	6.3	22.6		19.9	
Wood Duck	226	202	1576.1	1390.4	7.0	6.9	13.4		11.9	
Ringneck	38	11	238.4	64.6	6.3	5.9	269.0		245.5	
Mallard	132	97	783.3	564.8	5.9	5.8	38.7		36.1	
Blue-winged Teal	31	37	253.6	282.1	8.2	7.6		10.1		16.2

Conclusions

The State and Regional totals shown in the table showing status or production reflect better production this year than in 1956. Production increases are noted in the data presented in the table showing summer brood survey for the three important nesting species--blacks, woodies and mallards.

Because of the marked contrast in the phenology between 1957 and 1956 a conservation but optimistic interpretation of the data is necessary as follows:

Black Duck	-	Slight, moderate increase
Wood Duck	-	Slight increase
Mallard	-	Moderate increase

PACIFIC FLYWAY

On the basis of data collected in Alaska, Canada and the United States only, the wintering population of ducks, geese and swan decreased /somewhat/ in the Pacific Flyway as compared to a year ago. Populations of brant and coot increased slightly. Unfortunately, the survey in Mexico was not conducted. Since varying proportions of the flyway population of ducks winter in Mexico, it is not certain that the winter survey figures yielded reliable estimates of changing population, particularly among the waterfowl species which are commonly found south of our borders.

The breeding ground survey data fail to support the apparent decrease shown by the winter survey. In the breeding areas supplying the Pacific Flyway there was no significant change in the breeding population in Alaska, Alberta and the Northwest Territories. There were small decreases in Saskatchewan, Montana and Wyoming, and small increases in California and Washington. Overall, there was little change in the size of the breeding population.

As usual, weather and water conditions varied considerably within the breeding range supplying the flyway. For the most part, the season was early. In the Northwest Territories, however, an early warm spell was followed by freezing weather through mid-June. In the North Country, as usual, water conditions were favorable /as they usually are/. In much of the prairie nesting habitat drought prevailed throughout most of the spring and summer. Some areas, particularly in southern Alberta were completely dry and out of production. Fortunately, however, the areas were dry when spring migration took place and thus were avoided by the birds. At this point it is difficult to evaluate the effect that drought will have on the total season's production.

The July production surveys reveal that there was a large hatch among the early nesting species in southern Alberta. Production was above last year in Washington, Wyoming, and Nevada. The fall flight from Alaska, southern Saskatchewan, and Idaho is estimated to be about the same as last year, while a decrease from northern Alberta, the Northwest Territories, and Montana.

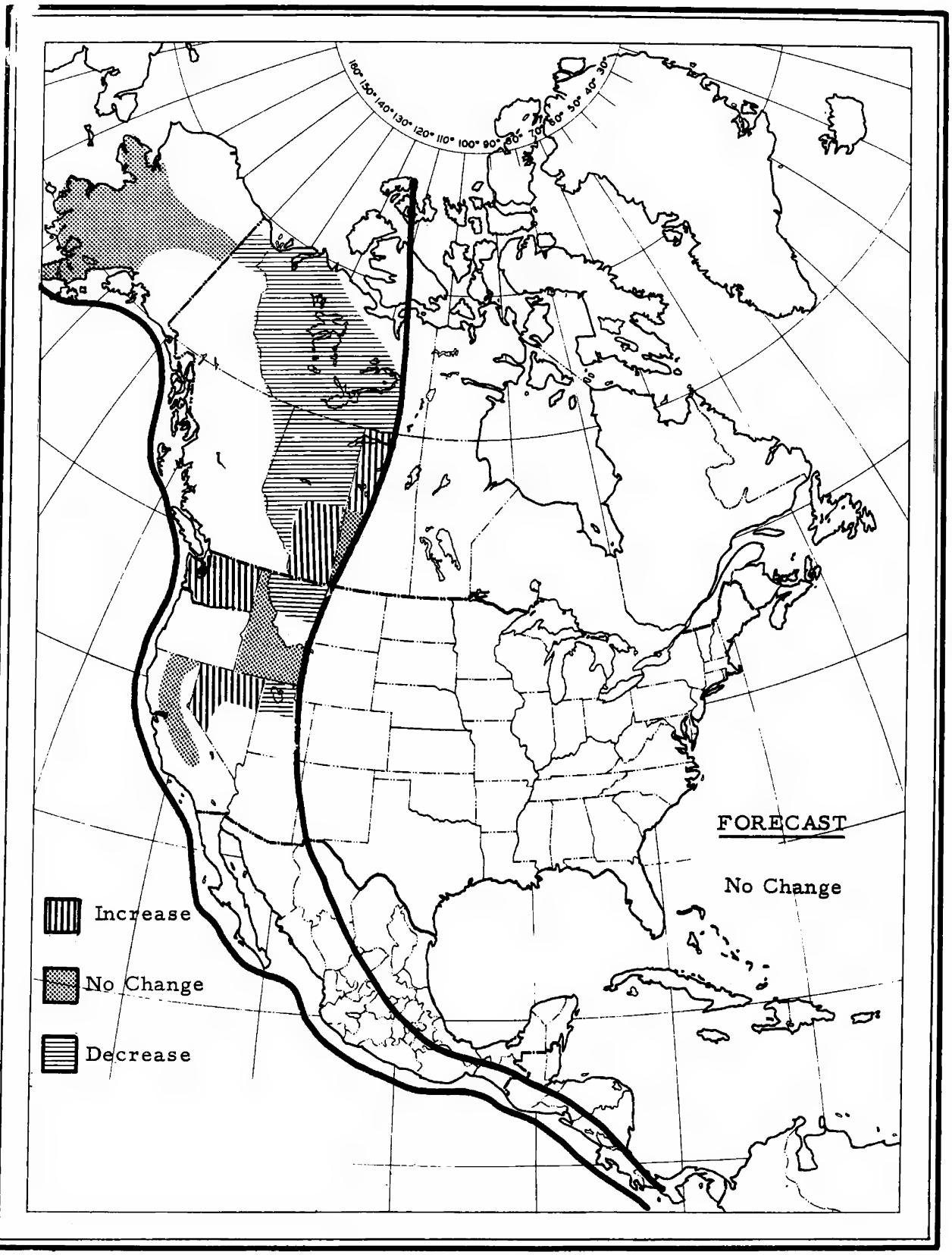
Over-all, it is expected that the fall flight of ducks in the Pacific Flyway will be about the same as last year with some possibility of a small decrease.

On the basis of a decrease in the breeding population of geese in the flyway as measured by the winter survey, it is estimated that there will be a small decrease in the fall flight of this group of species.

The production of coot is reported to be good in the important prairie nesting grounds and on this basis it is estimated that there will be a small increase in this species.

In view of the small increase in the breeding population of brant plus favorable weather conditions in Alaska, it is estimated that there will be a small increase in the fall flight of this species.

1957 FALL FLIGHT FORECAST FOR DUCKS
PACIFIC FLYWAY



CENTRAL FLYWAY

The January 1957 survey of waterfowl wintering grounds did not include Mexico this year. On the basis of coverage within the United States only, it would appear that there was a considerable loss of ducks, geese and coot in the Central Flyway (-45 percent, -36 percent, and -50 percent respectively). However, the loss took place largely in Texas, which was in poor condition by reason of drought. The implication is trong that the birds moved into Mexican wintering areas where they were not counted. This implication is supported by the fact that the breeding areas supplying the flyway did not show much change this year in breeding population as compared to a year ago. Although there were small decreases in most of the Central Flyway States and in southern Saskatchewan, there were increases in Manitoba and northern Saskatchewan. Although the increases did not balance the decreases entirely, the reduction in breeding population was small.

Much of the Central Flyway breeding range was characterized by drought during the 1957 season. Fortunately, many areas were dry when the birds moved northward and were thus avoided. Also, the season was early in most places and many of the early nesters were successful in bringing off a brood before water conditions became critical.

The July production surveys reveal that there has been an increase in the production of the early nesting species in the southern portions of Alberta, Saskatchewan, and Manitoba and in South Dakota and Nebraska. Production is forecast to be above last year in the northern portions of Saskatchewan and Manitoba. Decreases are forecast for northern Alberta, the Northwest Territories, North Dakota, Montana, and Colorado.

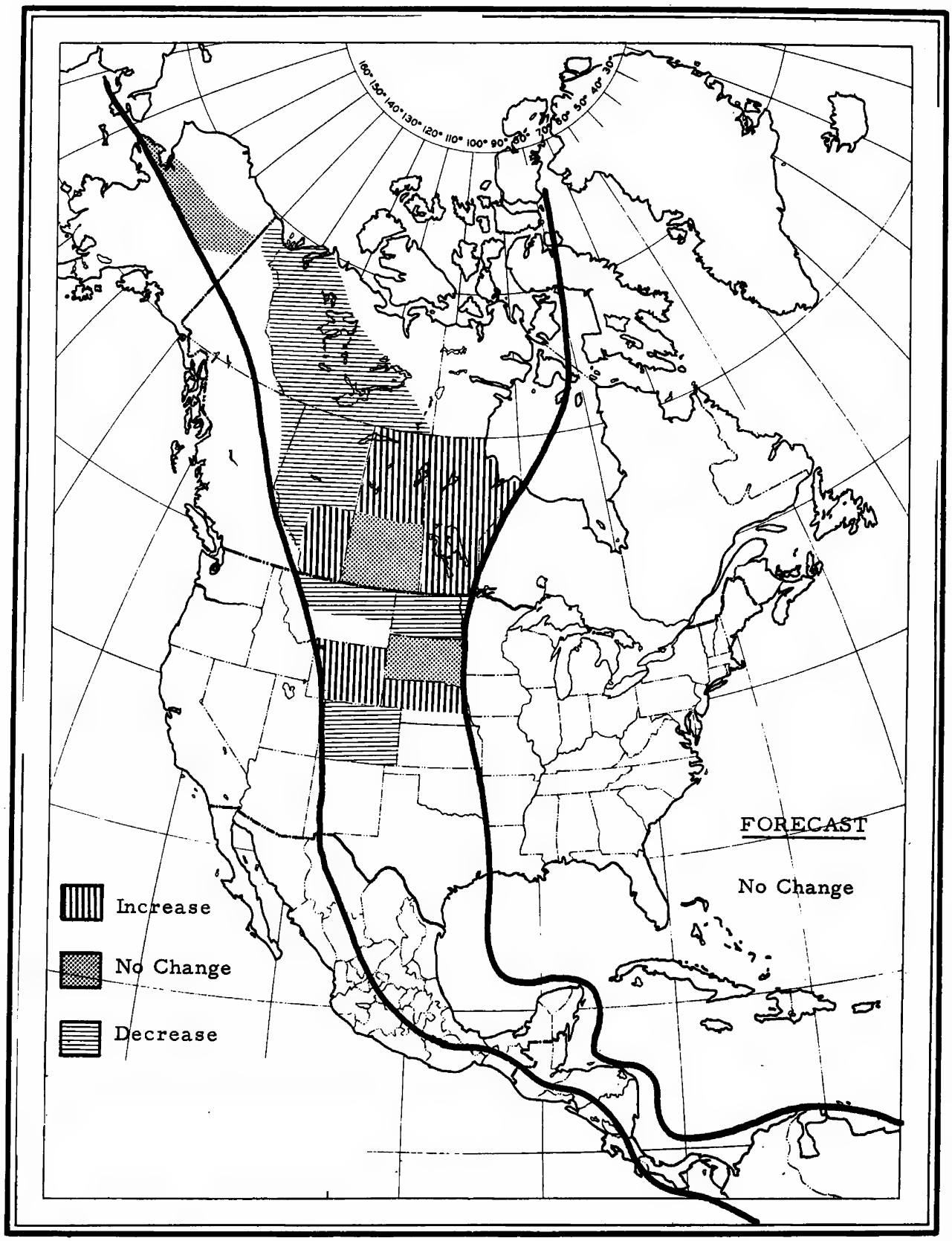
However, habitat conditions in most of the important breeding areas are unfavorable for last nesting species and for re-nesting. By reason of the necessity for terminating production surveys on about July 25, it is not possible to obtain a measure of the success of late nesters, and it is significant to note that the evidence of re-nesting on the part of early nesters was at an all-time low during July this year. It seems possible, therefore, that the deterioration in habitat conditions during July this year may reduce total production to less than last year in spite of the fact that the July brood index increased in several important areas.

Over-all, a summation of the field reports indicates that there should be no change in the fall flight of ducks in the Central Flyway as compared to 1956, with some possibility of a decrease as outlined above, particularly among the late nesting species.

On the basis of a decrease in the breeding population of geese as measured by the winter survey, it is estimated that there will be a small decrease in the fall flight of this group.

Coot production has been above average and in spite of a decrease in the breeding population, it is estimated that there will be a small increase in the fall flight.

1957 FALL FLIGHT FORECAST FOR DUCKS
CENTRAL FLYWAY



MISSISSIPPI FLYWAY

The 1957 winter survey in the Mississippi Flyway showed little change in population as compared to 1956. The population of most species was well above the average of recent years.

On the breeding grounds the picture was about the same. Although decreases in breeding populations were recorded in southern Saskatchewan, North Dakota, South Dakota, and Minnesota, there were increases throughout Manitoba and in northern Saskatchewan. Although the increases did not completely balance the decreases, the loss in breeding population was small.

Except for breeding areas in the Far North, much of the Mississippi Flyway breeding range was characterized by drought during the 1957 season. The amount of water available to the birds was reduced this spring throughout the southern portions of the Prairie Provinces and in North Dakota, South Dakota, Nebraska and Minnesota. Rains during late April and May alleviated the situation in Nebraska in time to attract an increased breeding population to the State. Heavy rain occurred in Minnesota sufficient to cause flood conditions in June, but the breeding population had already passed on northward. Conditions were improved in the Dakotas by frequent rain during the nesting and brood period, but in Alberta, Saskatchewan and parts of Manitoba, water levels have continued to drop during the summer.

The July production survey shows that there was a large hatch among the early nesting species in the southern parts of the Prairie Provinces. The early hatch was good also in Nebraska, and South Dakota. An increased production is expected from northern Saskatchewan, northern Manitoba, and Ontario, while decreases are expected from the Northwest Territories, North Dakota, Minnesota, and Michigan. On the basis of the data collected, it would appear that the 1957 fall flight is likely to be about the same as the 1956 flight. However, habitat conditions in most of the important breeding areas are unfavorable for late nesting species and for re-nesting. By reason of the necessity for terminating production surveys on about July 25, it is not possible to obtain a measure of the success of late nesters, and it is significant to note that evidence of re-nesting on the part of early nesters was at an all-time low during July this year. It seems possible, therefore, that the reduction in amount of water during July this year may reduce total production to less than last year in spite of the fact that the July brood index increased in several important areas.

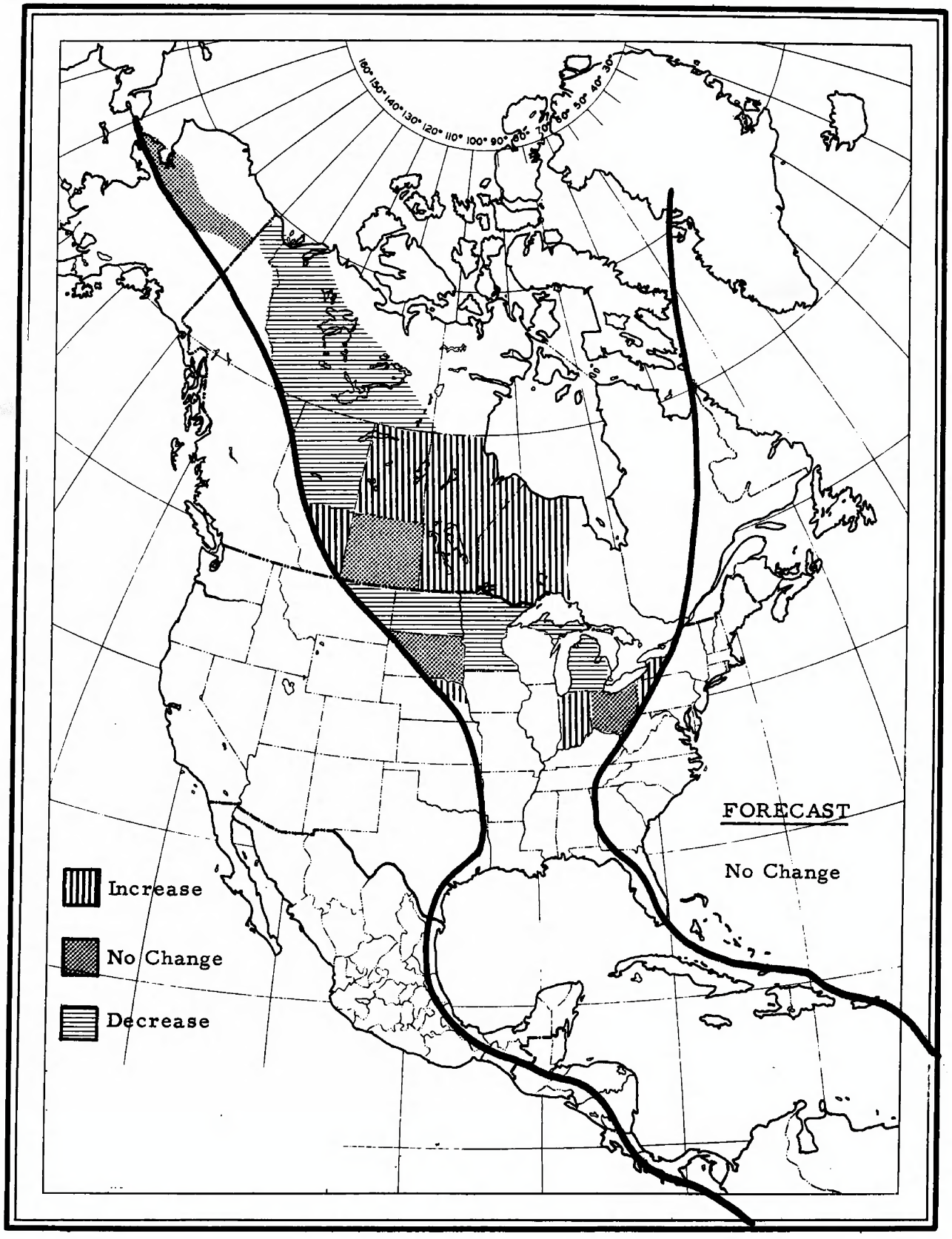
Over-all, on the basis of the field reports, it is estimated that the fall flight of ducks will be about the same as 1956, with some possibility of a decrease as outlined above, particularly among the late nesting species.

In view of the fact that there was little change in the breeding population of Canada and blue geese, plus the fact that the weather was not adverse as far as we know, it is estimated that the fall flight of these species will remain about the same.

Coot production has been excellent on the breeding areas and it is estimated that there will be a small increase in the fall flight of this species.

1957 FALL FLIGHT FORECAST FOR DUCKS

MISSISSIPPI FLYWAY



ATLANTIC FLYWAY

The annual January survey in 1957 in the Atlantic Flyway indicated a loss of about one-fifth of the wintering birds in the flyway as compared to 1956. The black duck and mallard remained about the same with the losses occurring mainly in scaup, coot, Canada geese, pintail, and canvasback.

In the breeding areas supplying the flyway, there were decreases in the breeding population in the Maritimes, Michigan, Minnesota, North Dakota, South Dakota, and southern Saskatchewan. Increases were recorded in the Northeastern States, Manitoba, northern Saskatchewan, and Ontario. A breeding population survey was not conducted this year in the Quebec-Labrador area. Over-all, the Atlantic Flyway breeding population decreased slightly, but not to the extent indicated by the winter survey in January. The reason for the discrepancy is not well understood.

Weather and water conditions in the eastern part of the continent were from satisfactory to good. In the prairie breeding areas drought prevailed, although it is difficult at present to evaluate the effect the dry conditions will have on the total season's production. The season was early in the prairies and there was a good hatch among the early nesters. Field crews were anticipating that the fall flight will be about the same as last year from Alaska, southern Saskatchewan, and South Dakota. Increases are expected from northern Saskatchewan, Manitoba, Ontario, and the Northeastern States. Decreases are expected from the Northwest Territories, Michigan, Minnesota, North Dakota, and the Maritimes.

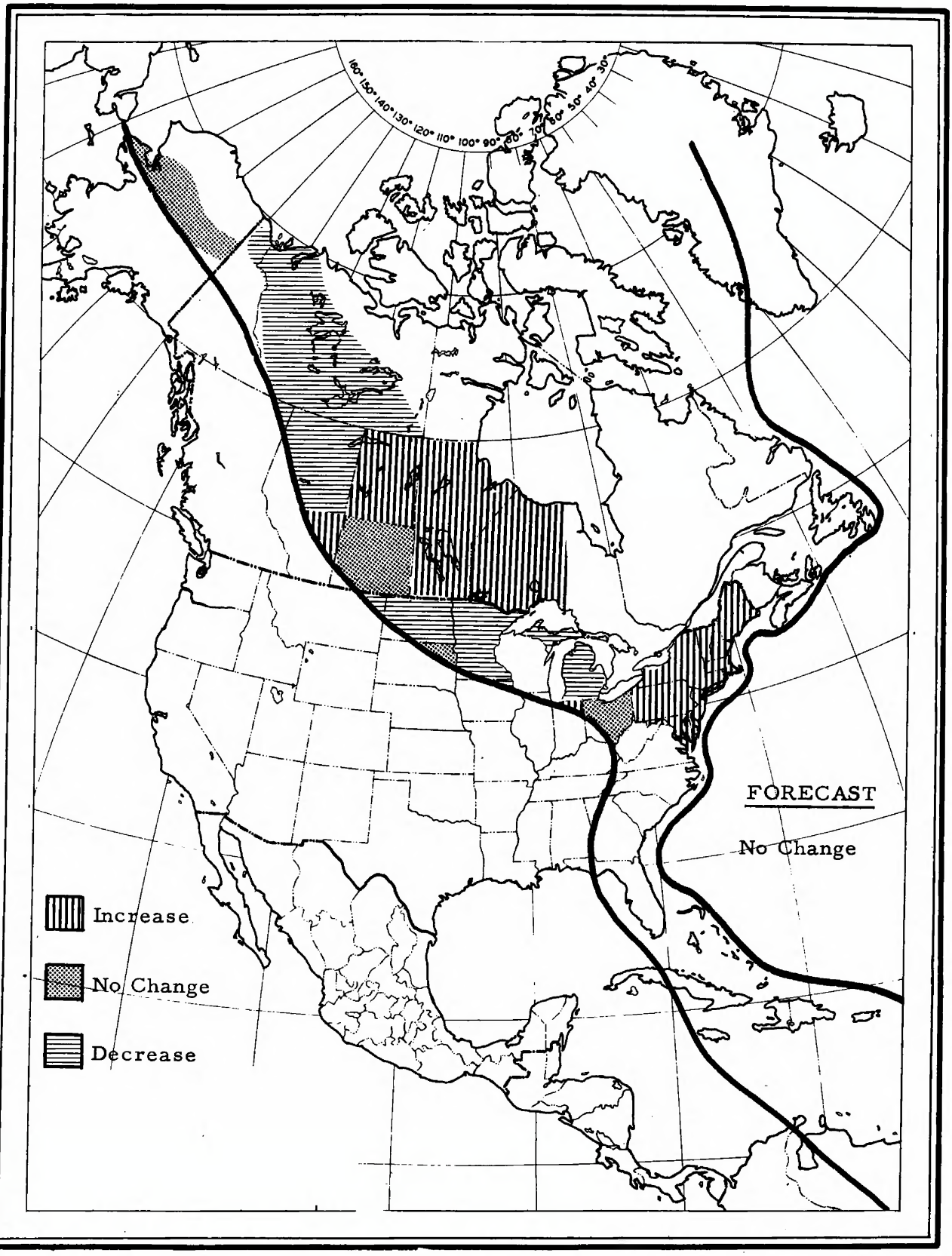
Over-all, it is estimated that the fall flight of ducks will remain about the same as last year, with some possibility of a small decrease if the drought in the prairies adversely affects the success of late nesters.

On the basis of a considerable reduction in the breeding population of Canada geese, as determined by the winter survey, it is estimated that there will be a small decrease in the fall flight of this species.

Coot production has been excellent and it is estimated that there will be a small increase in the fall flight of this species.

The wintering population of brant remained unchanged as compared to 1956. On this basis it is estimated that there will be no change in the fall flight of this species.

1957 FALL FLIGHT FORECAST FOR DUCKS
ATLANTIC FLYWAY



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